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TRAVELS

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INTO

NORTH AMERICA;

CONTAINING

ITS NATURAL HISTORY, AND

A circumstantial Account of its Plantations and Agriculture in general,

WITH THE

CIVIL, ECCLESIASTICAL AND COMMERCIAL STATE OF THE COUNTRY,

The MANNERS of the INHABITANTS, and several curious and IMPORTANT REMARKS on various Subjects.

BY PETER KALM,

Professor of Oeconomy in the University of *Aobo* in Swedish *Finland*, and Member of the *Swedish* Royal Academy of Sciences.

TRANSLATED INTO ENGLISH,

BY JOHN REINHOLD FORSTER, F. A. S.

Enriched with a Map, several Cuts for the Illustration of Natural History, and some additional Notes.

VOL. II.

LONDON:

Printed for the EDITOR;
And Sold by T. LOWNDES, in Fleet-street.
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PETER KALM's TRAVELS.

New Jersey, Raccoon.

December the seventh, 1748.

IN the morning I undertook again a little journey, to *Raccoon*, in *New Jersey*.

It does not seem difficult to find out the reasons, why the people multiply more here than in *Europe*. As soon as a person is old enough, he may marry in these provinces, without any fear of poverty; for there is such a tract of good ground yet uncultivated, that a new-married man can, without difficulty, get a spot of ground, where he may sufficiently subsist with his wife and children. The taxes are very low, and he

need not be under any concern on their account. The liberties he enjoys are ſo great, that he conſiders himſelf as a prince in his poſſeſſions. I ſhall here demonſtrate by ſome plain examples, what effect ſuch a conſtitution is capable of.

MAONS KEEN, one of the *Swedes* in *Raccoon*, was now near ſeventy years old: he had many children, grandchildren, and great-grandchildren; ſo that, of thoſe who were yet alive, he could muſter up forty-five perſons. Beſides them, ſeveral of his children and grandchildren died young, and ſome in a mature age. He was, therefore, uncommonly bleſſed. Yet his happineſs is not comparable to that which is to be ſeen in the following examples, and which I have extracted from the *Philadelphia* gazette.

IN the year 1732, *January* the 24th, died at *Ipſwich*, in *New England*, Mrs. *Sarah Turkil*, a widow, aged eighty-ſix years. She had brought ſixteen children into the world; and from ſeven of them only, ſhe had ſeen one hundred and ſeventy-ſeven grandchildren and great-grandchildren.

IN the year 1739, *May* the 30th, the children, grand and great grandchildren, of Mr. *Richard Buttington*, in the pariſh of *Cheſter*, in *Penſylvania*, were aſſembled in his

his houſe; and they made together one hundred and fifteen perſons. The parent of theſe children, *Richard Buttington*, who was born in *England*, was then entering into his eighty-fifth year: and was at that time quite freſh, active, and ſenſible. His eldeſt ſon, then ſixty years old, was the firſt *Engliſhman* born in *Penſylvania*.

In the year 1742, on the 8th of *January*, died at *Trenton*, in *New Jerſey*, Mrs. *Sarah Furman*, a widow, aged ninety-ſeven years. She was born in *New England*; and left five children, ſixty-one grandchildren, one hundred and eighty-two great-grandchildren, and twelve great-great-grandchildren, who were all alive when ſhe died.

In the year 1739, on the 28th of *January*, died at *South Kingſton*, in *New England*, Mrs. *Maria Hazard*, a widow, in the hundredth year of her age. She was born in *Rhode Iſland*, and was a grandmother of the then vice-governor of that iſland, Mr. *George Hazard*. She could count altogether five hundred children, grandchildren, great-grandchildren, and great-great-grandchildren. When ſhe died, two hundred and five perſons of them were alive; a granddaughter of hers had already been grandmother near fifteen years.

In this manner, the uſual wiſh or bleſſing in our liturgy, that the new-married couple

may see their grandchildren, till the third and fourth generation, has been literally fulfilled in regard to some of these persons *.

December the 9th. In every country, we commonly meet with a number of insects; of which many, though they be ever so small and contemptible, can do considerable damage to the inhabitants. Of these dangerous insects, there are likewise some in *North America*: some are peculiar to that country, others are common to *Europe* likewise.

I have already, in the preceding volume, mentioned the *Mosquitoes*, as a kind of disagreeable gnats; and another noxious insect, the *Bruchus Pisi*, which destroys whole fields with pease. I shall here add some more.

There are a kind of *Locusts*, which about every seventeenth year come hither in incredible numbers. They come out of the ground in the middle of *May*, and make, for six weeks together, such a noise in the trees and woods, that two persons who meet in such places, cannot understand each other, unless they speak louder than the locusts can chirp. During that time, they make, with the sting in their tail, holes into the soft bark of the little branches on the trees, by which means these branches are ruined.

* Mr. *Kalm* speaks here of the *Swedish* Liturgy.

ruined. They do no other harm to the trees or other plants. In the interval between the years when they are ſo numerous, they are only ſeen or heard ſingle in the woods.

THERE is likewiſe a kind of *Caterpillars* in theſe provinces, which eat the leaves from the trees. They are alſo innumerable in ſome years. In the intervals there are but few of them: but when they come, they ſtrip the trees ſo entirely of their leaves, that the woods in the middle of ſummer are as naked as in winter. They eat all kinds of leaves, and very few trees are left untouched by them; as, about that time of the year the heat is moſt exceſſive. The ſtripping the trees of their leaves has this fatal conſequence, that they cannot withſtand the heat, but dry up entirely. In this manner, great foreſts are ſometimes entirely ruined. The *Swedes* who live here ſhewed me, here and there, great tracts in the woods, where young trees were now growing, inſtead of the old ones, which, ſome years ago, had been deſtroyed by the caterpillars. Theſe caterpillars afterwards change into moths, or *phalænæ*, which ſhall be deſcribed in the ſequel, in their proper places.

IN other years the *Graſs-worms* do a great deal of damage in ſeveral places, both in the meadows and corn-fields. For the

fields are at certain times over-run with great armies of these worms, as with the other insects; yet it is very happy that these many plagues do not come all together. For in those years when the locusts are numerous, the caterpillars and grass-worms are not very considerable, and it happens so with the latter kinds, so that only one of the three kinds comes at a time. Then there are several years when they are very scarce. The grass-worms have been observed to settle chiefly in a fat soil; but as soon as careful husbandmen discover them, they draw narrow channels with almost perpendicular sides quite round the field in which the worms are settled; then by creeping further they all fall into the ditch, and cannot get out again. I was assured by many persons that these three sorts of insects followed each other pretty closely; and that the locusts came in the first year, the caterpillars in the second, and the grass-worms in the last: I have likewise found by my own experience that this is partly true.

Moths, or *Tineæ*, which eat the clothes, are likewise abundant here. I have seen cloth, worsted gloves, and other woollen stuffs, which had hung all the summer locked up in a shrine, and had not been

taken

taken care of, quite cut throughby these worms, so that whole pieces fell out: Sometimes they were so spoiled that they could not be mended again. Furs which had been kept in the garret were frequently so ruined by worms, that the hair went off by handfuls. I am however not certain whether these worms were originally in the country, or whether they were brought over from *Europe*.

FLEAS are likewise to be found in this part of the world. Many thousands were undoubtedly brought over from other countries; yet immense numbers of them have certainly been here since time immemorial. I have seen them on the grey squirrels, and on the hares which have been killed in such desart parts of this country, where no human creature ever lived. As I afterwards came further up into the country, and was obliged to lie at night in the huts and beds of the *Indians*, I was so plagued by immense quantities of fleas, that I imagined I was put to the torture. They drove me from the bed, and I was very glad to sleep on the benches below the roof of the huts. But it is easy to conceive that the many dogs which the *Indians* keep, breed fleas without end. Dogs and men lie promiscuously in the huts;

huts; and a ſtranger can hardly lie down and ſhut his eyes, but he is in danger of being either ſqueezed to death, or ſtifled by a dozen or more dogs, which lie round him, and upon him, in order to have a good reſting place. For I imagine they do not expect that ſtrangers will venture to beat them or throw them off, as their maſters and miſtreſſes commonly do.

The noiſy *Crickets (Gryllus domeſticus)* which are ſometimes to be met with in the houſes in *Sweden*, I have not perceived in any part of *Penſylvania* or *New Jerſey*, and other people whom I have aſked, could not ſay that they had ever ſeen any. In ſummer there are a kind of *black Crickets** in the fields, which make exactly the ſame chirping noiſe as our houſe crickets. But they keep only to the fields, and were ſilent as ſoon as winter or the cold weather came on, They ſay it ſometimes happens that theſe field crickets take refuge in houſes, and chirp continually there, whilſt it is warm weather, or whilſt the rooms are warm; but as ſoon as it grows cold they are ſilent. In ſome parts of the province of *New York*, and in *Canada*, every farm-

* Perhaps it is the *Gryllus campeſtris*, or common *black field cricket* of *Europe*, of which *Roeſel* in his work on inſects, vol. 2, Gryll. f. 13. has given a fine drawing. F.

farm-house and most of the houses in the towns, swarm with so many, that no farm-house in our country can be better stocked with them. They continue their music there throughout the whole winter.

Bugs *(Cimex lectularius)* are very plentiful here. I have been sufficiently tormented by them, in many places in *Canada:* But I do not remember having seen any with the *Indians*, during my stay at *Fort Frederic*. The commander there, Mr. *de Louſignan*, told me, that none of the *Illinois* and other *Indians* of the western parts of *North America* knew any thing of these vermin. And he added, that he could with certainty say this from his own experience, having been among them for a great while. Yet I cannot determine whether bugs were first brought over by the *Europeans*, or whether they have originally been in the country. Many people looked upon them as natives of this country, and as a proof of it said, that under the wings of bats the people had often found bugs, which had eaten very deep into the flesh. It was therefore believed that the bats had got them in some hollow tree, and had afterwards brought them into the houses, as they commonly fix themselves close to the walls, and creep into the little chinks which they

they meet with. But as I have never ſeen any bugs upon bats, I cannot ſay any thing upon that ſubject. Perhaps a louſe or a tick *(Acarus)* has been taken for a bug. Or, if a real bug has been found upon a bat's wing, it is very eaſy to conceive that it fixed on the bat, whilſt the latter was ſitting in the chinks of a houſe ſtocked with *European* bugs.

As the people here could not bear the inconvenience of theſe vermin, any more than we can in *Sweden*, they endeavoured to expel them by different means. I have already remarked in the preceding volume, that the beds to that purpoſe were made of *Saſſafras* wood, but that they were only temporary remedies. Some perſons aſſured me that they had found from their own experience, and by repeated trials, that no remedy was more effectual towards the expulſion of bugs, than the injecting of boiling water into all the cracks where they are ſettled, and waſhing all the wood of the beds with it; this being twice or thrice repeated, the bugs are wholly deſtroyed. But if there are bugs in neighbouring houſes, they will faſten to ones clothes, and thus be brought over into other houſes.

I cannot ſay whether theſe remedies are good

good or no, as I have not tried them; but by repeated trials I have been convinced that sulphur, if it be properly employed, entirely destroys bugs and their eggs in beds and walls, though they were ten times more numerous than the ants in an ant-hill*.

The *Mill-beetles*, or *Cock-roaches*, are likewise a plague of *North America*, and are settled in many of its provinces. The learned Dr. *Colden* was of opinion that these insects were properly natives of the *West Indies*, and that those that were found in *North America* were brought over from those islands. To confirm his opinion, he said, that it was yet daily seen how the ships coming with goods from the *West Indies* to *North America* brought mill-beetles with them in great numbers. But from the observations which I have made in this country, I have reason to believe that these insects have been on the continent of *North America* since time immemorial. Yet notwithstanding this I do not deny their being brought over from the *West Indies*. They are in almost every house in the city of *New York*; and those are undoubtedly come over with ships. But how can that be

* A still more infallible remedy, is to wash all the furniture, infected with that vermin, with a solution of arsenic. F.

be ſaid of thoſe mill-beetles, which are found in the midſt of the woods and deſarts?

THE *Engliſh* likewiſe call the *Mill-beetles*, *Cock-roaches*, and the *Dutch* give them the name of *Kackerlack*. The *Swedes* in this country call them *Brodoetare*, or *Bread-eaters*, on account of the damage they do to the bread, which I am going to deſcribe. Dr. *Linnæus* calls them *Blatta Orientalis*. Many of the *Swedes* call them likewiſe *Kackerlack*. They are not only obſerved in the houſes, but in the ſummer they appear often in the woods, and run about the trees, which are cut down. On bringing in all ſorts of old rotten blocks of wood for fewel, in *February*, I diſcovered ſeveral cock-roaches ſettled in them; they were at firſt quite torpid, or as it were dead; but after lying in the room for a while, they recovered, became very lively, and began to run about. I afterwards found very often, that when old rotten wood was brought home in winter, and cut in pieces for fewel, the cock-roaches were got into it in numbers, and lay in it in a torpid ſtate. In the ſame winter, a fellow cut down a great dry tree, and was about to ſplit it. I then obſerved in a crack, ſome fathoms above the ground,

several cock-roaches together with the common ants. They were, it seems, crept up a great way, in order to find a secure place of abode against winter. On travelling in the middle of *October* 1749, through the uninhabited country between the *English* and *French* colonies, and making a fire at night near a thick half rotten tree, on the shore of lake *Champlain*, numbers of cock-roaches came out of the wood, being wakened by the smoke and the fire, which had driven them out of their holes. The *Frenchmen*, who were then in my company, did not know them, and could not give them any name. In *Canada* the *French* did not remember seeing any in the houses. In *Pensylvania*, I am told, they run in immense numbers about the sheaves of corn, during the harvest. At other times they live commonly in the houses in the *English* settlements, and lie in the crevices, especially in the cracks of those beams which support the ceiling, and are nearest to the chimney.

They do a deal of damage by eating the soft parts of the bread. If they have once made a hole into a loaf, they will in a little time eat all the soft part in it, so that on cutting the loaf, nothing but the crust is left. I am told they likewise eat other victuals.

victuals. Sometimes they bite people's noſes or feet, whilſt they are aſleep. An old *Swede*, called *Sven Laock*, a grandſon of the Rev. Mr. *Laockenius*, one of the firſt *Swediſh* clergymen that came to *Penſylvania*, told me, that he had in his younger years been once very much frightened on account of a cock-roach, which crept into his ear whilſt he was aſleep. He waked ſuddenly, jumped out of bed, and felt that the inſect, probably out of fear, was endeavouring with all its ſtrength to get deeper. Theſe attempts of the cock-roach were ſo painful to him, that he imagined his head was burſting, and he was almoſt ſenſeleſs; however he haſtened to the well, and bringing up a bucket full of water, threw ſome into his ear. As ſoon as the cock-roach found itſelf in danger of being drowned, it endeavoured to ſave itſelf, and puſhed backwards out of the ear, with its hind feet, and thus happily delivered the poor man from his fears.

The *Wood-lice* are diſagreeable inſects, which in a manner are worſe than the preceding; but as I have already deſcribed them in a peculiar memoir, which is printed among the memoirs of the Royal Academy

Academy of Sciences for the year 1754, I refer my readers to that account.

December the 11th. This morning I made a little excursion to *Penn's Neck*, and further over the *Delaware* to *Wilmington*. The country round *Penn's Neck* has the same qualities as that about other places in this part of *New Jersey*. For the ground consists chiefly of sand, with a thin stratum of black soil. It is not very hilly, but chiefly flat, and in most places covered with open woods of such trees as have annual leaves, especially oak. Now and then you see a single farm, and a little corn field round it. Between them are here and there little marshes or swamps, and sometimes a brook with water, which has a very slow motion.

The woods of these parts consist of all sorts of trees, but chiefly of oak and hiccory. These woods have certainly never been cut down, and have always grown without hindrance. It might therefore be expected that there are trees of an uncommon great age to be found in them; but it happens otherwise, and there are very few trees three hundred years old. Most of them are only two hundred years old; and this convinced me that trees have the same quality as animals, and die after

they are arrived at a certain age. Thus we find great woods here, but when the trees in them have ſtood an hundred and fifty or an hundred and eighty years, they are either rotting within, or loſing their crown, or their wood becomes quite ſoft, or their roots are no longer able to draw in ſufficient nouriſhment, or they die from ſome other cauſe. Therefore when ſtorms blow, which ſometimes happens here, the trees are broke off either juſt above the root, or in the middle, or at the ſummit. Several trees are likewiſe torn out with their roots by the power of the winds. The ſtorms thus cauſe great devaſtations in theſe foreſts. Every where you ſee trees thrown down by the winds, after they are too much weakened by one or the other of the above mentioned cauſes to be able to reſiſt their fury. Fire likewiſe breaks out often in the woods, and burns the trees half way from the root, ſo that a violent guſt of wind eaſily throws them down.

On travelling through theſe woods, I purpoſely tried to find out, by the poſition of the trees which were fallen down, which winds are the ſtrongeſt hereabouts. But I could not conclude any thing with certainty, for the trees fell on all ſides, and lay towards all the points of the compaſs.

I there-

I therefore judged, that any wind which blows from that ſide where the roots of the tree are weakeſt and ſhorteſt, and where it can make the leaſt reſiſtance, muſt root it up and throw it down. In this manner the old trees die away continually, and are ſucceeded by a young generation. Thoſe which are thrown down ly on the ground and putrify, ſooner or later, and by that means encreaſe the black ſoil, into which the leaves are likewiſe finally changed, which drop abundantly in autumn, are blown about by the winds for ſome time, but are heaped up, and lie on both ſides of the trees, which are fallen down. It requires ſeveral years before a tree is intirely reduced to duſt. When the winds tear up a tree with the roots, a quantity of looſe ſoil commonly comes out with and ſticks to them for ſome time, but at laſt it drops off, and forms a little hillock, which is afterwards augmented by the leaves, which commonly gather about the roots. Thus ſeveral inequalities are formed in the woods, ſuch as little holes and hills; and by this means the upper ſoil muſt likewiſe be heaped up in ſuch places.

Some trees are more inclined to putrify than others. The *tupelo-tree (Nyſſa)*, the

tulip-tree (Liriodendron), and the *ſweet gum-tree (Liquidambar)*, became rotten in a ſhort time. The *hiccory* did not take much time, and the *black oak* fell ſooner to pieces than the *white oak*; but this was owing to circumſtances. If the bark remained on the wood, it was for the greateſt part rotten, and entirely eaten by worms within, in the ſpace of ſix, eight, or ten years, ſo that nothing was to be found but a reddiſh brown duſt. But if the bark was taken off, they would often lie twenty years before they were entirely rotten. The ſuddenneſs of a tree's growth, the bigneſs of its pores, and the frequent changes of heat and wet in ſummer, cauſe it to rot ſooner. To this it muſt be added, that all ſorts of inſects make holes into the ſtems of the fallen trees, and by that means the moiſture and the air get into the tree, which muſt of courſe forward putrefaction. Moſt of the trees here have deciduous or annual leaves. Many of them begin to rot whilſt they are yet ſtanding and blooming. This forms the hollow trees, in which many animals make their neſts and places of refuge.

The breadth of the *Delaware* directly oppoſite *Wilmington* is reckoned an *Engliſh* mile and a half; yet to look at it, it did not

not seem to be so great. The depth of the river, in the middle, is said to be from four to six fathoms here.

December the 12th. The *joiners* say, that among the trees of this country they chiefly use the *black walnut-trees*, the *wild cherry-trees*, and the *curled maple*. Of the *black walnut-trees (Juglans nigra)* there is yet a sufficient quantity. However careless people take pains enough to destroy them, and some peasants even use them as fewel. The wood of the *wild cherry-trees (Prunus Virginiana)* is very good, and looks exceedingly well; it has a yellow colour, and the older the furniture is, which is made of it, the better it looks. But it is already difficult to get at it, for they cut it every where, and plant it no where. The *curled maple (Acer rubrum)* is a species of the common red maple, but likewise very difficult to be got. You may cut down many trees without finding the wood which you want. The wood of the *sweet gum-tree (Liquidambar)* is merely employed in joiner's work, such as tables, and other furniture. But it must not be brought near the fire, because it warps. The firs and the *white cedars* (*Cupressus thyoides*) are likewise made use of by the joiners for different sorts of work.

THE millers who attended the mill which ſtood here, ſaid, that the axle-trees of the wheels of the mill were made of *white oak*, and that they continued good three or four years, but that the fir-wood does not keep ſo well. The cogs of the mill-wheel, and the pullies, are made of the wood of the white walnut-tree, becauſe it is the hardeſt which can be got here. The wood of *mulberry-trees* is of all others reckoned the moſt excellent for pegs and plugs in ſhips and boats.

AT night I went over the river *Delaware*, from *Willmington*, to the ferrying-place, on the *New Jerſey* ſide.

December the 13th. IN the morning I returned to *Raccoon*.

ON many trees in the woods of this country, either on one of the ſides, or in the middle of a branch, or round a branch, are greater or leſſer *knobs* or excreſcences. Sometimes there is only a ſingle one in a tree. In the ſize there is a conſiderable difference, for ſome of theſe knobs are as big and bigger than a man's head, others are only ſmall. They project above the ſurface of the tree, like a tumor. Sometimes a tree was quite covered with them. They do not ly on one ſide only, but often form a circle round a branch, and even round

round the ſtem itſelf. The trees which have theſe knobs are not always great ones, but ſome not above a fathom high, The knobs commonly conſiſt of the ſame parts as the wood itſelf, and look within like curled wood. Some of them are hollow. When a knob on a little tree is cut open, we commonly find a number of little worms in it, which are ſometimes alſo common in the greater knobs. This ſhews the origin of the knobs in general. The tree is ſtung by inſects, which lay their eggs under the bark, and from the eggs worms are afterwards hatched. They occaſion an extravaſation of the ſap, which gradually condenſes into a knob. Only the trees with annual deciduous leaves have theſe knobs, and among them chiefly the oak, of which again the black and *Spaniſh* oak have the greateſt abundance of knobs. The *aſh trees*, (*Fraxinus excelſior*) and the *red maple* (*Acer rubrum*) likewiſe have enough of them. Formerly the *Swedes*, and more eſpecially the *Finlanders*, who are ſettled here, made diſhes, bowls, &c. of the knobs which were on the aſh-trees. Theſe veſſels, I am told, were very pretty, and looked as if they were made of curled wood. The oak-knobs cannot be employed in this manner, as they are commonly

worm-eaten and rotten within. At present the *Swedes* no longer make use of such bowls and dishes, but make use of earthen ware, or vessels made of other wood. Some knobs are of an uncommon size, and make a tree have a monstrous appearance. Trees with knobs are very common in the woods of this country *.

The roads are good or bad according to the difference of the ground. In a sandy soil the roads are dry and good; but in a clayey one they are bad. The people here are likewise very careless in mending them. If a rivulet be not very great, they do not make a bridge over it; and travellers may do as well as they can to get over: Therefore many people are in danger of being drowned in such places, where the water is

* In *Siberia*, and in the province of *Wiatka*, in the government of *Cazan*, in *Russia*, the inhabitants make use of the knobs, which are pretty frequently found in birches, to make bowls and other domestic utensils thereof. They are turned, made pretty thin, and covered with a kind of varnish, which gives them a pretty appearance; for the utensil looks yellow, and is marbled quite in a picturesque manner, with brown veins. The best kind of these vessels are made so thin that they are semidiaphanous, and when put into hot water they grow quite pliant, and may be formed by main force, quite flat, but when again left to themselves, and grown cold, they return to their original shape. This kind of wood is called, in *Russia*, *Kap*, and the vessels made of it, *kappowie Tchaschki*, and are pretty high in price, when they are of the best kind, and well varnished. F.

is risen by a heavy rain. When a tree falls across the road, it is seldom cut off, to keep the road clear, but the people go round it. This they can easily do, since the ground is very even, and without stones; has no underwood or shrubs, and the trees on it stand much asunder. Hence the roads here have so many bendings.

THE farms are most of them single, and you seldom meet with even two together, except in towns, or places which are intended for towns; therefore there are but few villages. Each farm has its corn-fields, its woods, its pastures and meadows. This may perhaps have contributed something towards the extirpation of wolves, that they every where met with houses, and people who fired at them. Two or three farm-houses have generally a pasture or a wood in common, and there are seldom more together; but most of them have their own grounds divided from the others.

December the 18th. ALL persons who intend to be married, must either have their banns published three times from the pulpit, or get a licence from the governor. The banns of the poorer sort of people only are published, and all those who are a little above them get a licence from the governor. In that licence he declares that he has examined the affair, and found no obstacles

ſtacles to hinder the marriage, and therefore he allows it. The licence is ſigned by the governor; but, before he delivers it, the bridegroom muſt come to him in company with two creditable and well known men, who anſwer for him, that there really is no lawful obſtacle to his marriage. Theſe men muſt ſubſcribe a certificate, in which they make themſelves anſwerable for, and engage to bear all the damages of, any complaints made by the relations of the perſons who intend to be married, by their guardians, their maſters, or by thoſe to whom they may have been promiſed before. For all theſe circumſtances the governor cannot poſſibly know. They further certify that nothing hinders the intended marriage, and that nothing is to be feared on that account. For a licence they pay five and twenty ſhillings in *Penſylvanian* money, at *Philadelphia*. The governor keeps twenty ſhillings, or one pound, and the remaining five ſhillings belong to his ſecretary. The licence is directed only to proteſtant clergymen. The quakers have a peculiar licence to their marriages. But as it would be very troubleſome, eſpecially for thoſe who live far from the governor's reſidence to come up to town for every licence, and to bring the men with them who

who are to answer for them, the clergymen in the country commonly take a sufficient number of licences and certificates, which are ready printed, with blanks left for the names; they give them occasionally, and get the common money, one pound, five shillings, for each of them, besides something for their trouble. The money that they have collected, they deliver to the governor as soon as they come to town, together with the certificates, which are signed by two men, as abovementioned; they then take again as many licences as they think sufficient: from hence we may conceive that the governors in the *English North American* colonies, besides their salaries, have very considerable revenues *.

THERE is a great mixture of people of all sorts in these colonies, partly of such as are lately come over from *Europe*, and partly of such as have not yet any settled place of abode. Hence it frequently happens that when a clergyman has married such a couple,

* Though it is very desirable, that the members of the church of *England* may enjoy the same religious liberty in *America* as the rest of their fellow-subjects, and have every part of their religious establishment among themselves, and that therefore bishops might be introduced in *America*, it is however to be feared this will prove one of the obstacles to the introducing of *English* bishops in that part of the world.

couple, the bridegroom ſays he has no money at preſent, but would pay the fee at the firſt opportunity: however he goes off with his wife, and the clergyman never gets his due. This proceeding has given occaſion to a cuſtom which is now common in *Maryland*. When the clergyman marries a very poor couple, he breaks off in the middle of the Liturgy, and cries out, *Where is my fee?* The man muſt then give the money, and the clergyman proceeds; but if the bridegroom has no money, the clergyman defers the marriage till another time, when the man is better provided. People of fortune, of whom the clergyman is ſure to get his due, need not fear this diſagreeable queſtion, when they are married.

HOWEVER, though the parſon has got licences to marry a couple, yet if he be not very careful, he may get into very diſagreeable circumſtances; for in many parts of the country there is a law made, which, notwithſtanding the governor's licence, greatly limits a clergyman in ſome caſes. He is not allowed to marry a couple who are not yet of age, unleſs he be certain of the conſent of their parents. He cannot marry ſuch ſtrangers as have bound themſelves to ſerve a certain number of years, in order

to

to pay off their passage from *Europe*, without the consent of their masters; if he acts without their consent, or in opposition to it, he must pay a penalty of fifty pounds, *Pensylvania* currency, though he has the licence, and the certificate of the two men who are to answer for any objection. But parents or masters give themselves no concern about these men, but take hold of the clergyman, who is at liberty to prosecute those who gave him the certificate, and to get his damages repaid. With the consent of the parents and masters he may marry people without danger to himself. No clergyman is allowed to marry a negro with one of *European* extraction, or he must pay a penalty of one hundred pounds, according to the laws of *Pensylvania*.

THERE is a very peculiar diverting custom here, in regard to marrying. When a man dies, and leaves his widow in great poverty, or so that she cannot pay all the debts with what little she has left, and that, notwithstanding all that, there is a person who will marry her, she must be married in no other habit than her shift. By that means, she leaves to the creditors of her deceased husband her cloaths, and every thing which they find in the house. But she is not obliged

obliged to pay them any thing more, because she has left them all she was worth, even her cloaths, keeping only a shift to cover her, which the laws of the country cannot refuse her. As soon as she is married, and no longer belongs to the deceased husband, she puts on the cloaths which the second has given her. The *Swedish* clergymen here have often been obliged to marry a woman in a dress which is so little expensive, and so light. This appears from the registers kept in the churches, and from the accounts given by the clergymen themselves. I have likewise often seen accounts of such marriages in the *English* gazettes, which are printed in these colonies; and I particularly remember the following relation: A woman went, with no other dress than her shift, out of the house of her deceased husband to that of her bridegroom, who met her half way with fine new cloaths, and said, before all who were present, that he lent them his bride; and put them on her with his own hands. It seems, he said that he lent the cloaths, lest, if he had said he gave them, the creditors of the first husband should come, and take them from her; pretending, that she was looked upon as the relict of her first husband, before she was married to the second.

December the 21st. It seems very probable, from the following observations, that long before the arrival of the *Swedes*, there have been *Europeans* in this province; and, in the sequel, we shall give more confirmations of this opinion. The same old *Maons Keen*, whom I have already mentioned before, told me repeatedly, that on the arrival of the *Swedes* in the last century, and on their making a settlement, called *Helsingburg*, on the banks of the *Delaware*, somewhat below the place where *Salem* is now situated; they found, at the depth of twenty feet, some wells, inclosed with walls. This could not be a work of the native *Americans*, or *Indians*, as bricks were entirely unknown to them when the *Europeans* first settled here, at the end of the fifteenth century; and they still less knew how to make use of them. The wells were, at that time, on the land; but in such a place, on the banks of the *Delaware*, as is sometimes under water, and sometimes dry. But since, the ground has been so washed away, that the wells are entirely covered by the river, and the water is seldom low enough to shew the wells. As the *Swedes* afterwards made new wells for themselves, at some distance from the former, they discovered, in the ground, some broken earthen vessels, and some entire

good

good bricks; and they have often got them out of the ground by ploughing.

From these marks, it seems, we may conclude, that in times of yore, either *Europeans* or other people of the then civilized parts of the world, have been carried hither by storms, or other accidents, settled here, on the banks of the river, burnt bricks, and made a colony here; but that they afterwards mixed with the *Indians*, or were killed by them. They may gradually, by conversing with the *Indians*, have learnt their manners, and turn of thinking. The *Swedes* themselves are accused, that they were already half *Indians*, when the *English* arrived in the year 1682. And we still see, that the *French*, *English*, *Germans*, *Dutch*, and other *Europeans*, who have lived for several years together in distant provinces, near and among the *Indians*, grow so like them, in their behaviour and thoughts, that they can only be distinguished by the difference of their colour. But history, together with the tradition among the *Indians*, assures us, that the above-mentioned wells and bricks cannot have been made at the time of *Columbus*'s expedition, nor soon after; as the traditions of the *Indians* say, that those wells were made long before that epocha. This account of the wells, which had been inclosed

incloſed with bricks, and of ſuch bricks as have been found in ſeveral places in the ground, I have afterwards heard repeated by many other old *Swedes*.

December the 22d. AN old farmer foretold a change of the weather, becauſe the air was very warm this day at noon, though the morning had been very cold. This he likewiſe concluded, from having obſerved the clouds gathering about the ſun. The meteorological obſervations annexed to the end of this volume will prove that his obſervation was juſt.

December the 31ſt. THE remedies againſt the tooth-ach are almoſt as numerous as days in a year. There is hardly an old woman but can tell you three or four ſcore of them, of which ſhe is perfectly certain that they are as infallible and ſpeedy in giving relief, as a month's faſting, by bread and water, is to a burthenſome paunch. Yet it happens often, nay too frequently, that this painful diſeaſe eludes all this formidable army of remedies. However, I cannot forbear obſerving the following remedies, which have ſometimes, in this country, been found effectual againſt the tooth-ach.

WHEN the pains come from the hollowneſs of the teeth, the following remedy is

ſaid to have had a good effect: A little cotton is put at the bottom of a tobacco-pipe; the tobacco is put in upon it, and lighted; and you ſmoke till it is almoſt burnt up. By ſmoking, the oil of the tobacco gets into the cotton, which is then taken out, and applied to the tooth as hot as it can be ſuffered.

THE chief remedy of the *Iroquois*, or *Iroqueſe*, againſt the tooth-ach occaſioned by hollow teeth, I heard of Captain *Lindſey*'s lady, at *Oſwego*; and ſhe aſſured me, that ſhe knew, from her own experience, that the remedy was effectual. They take the ſeed capſules of the *Virginian Anemone*, as ſoon as the ſeed is ripe, and rub them in pieces. It will then be rough, and look like cotton. This cotton-like ſubſtance is dipped into ſtrong brandy, and then put into the hollow tooth, which commonly ceaſes to ache ſoon after. The brandy is biting or ſharp, and the ſeeds of the anemone, as moſt ſeeds of the *Polyandria Polygynia* claſs of plants (or ſuch as have many *Stamina*, or male flowers, and many *Piſtilla*, or female flowers) have likewiſe an acrimony. They therefore, both together, help to aſſuage the pain; and this remedy is much of the ſame kind with the former. Beſides that, we have many ſeeds which

which have the same qualities with the *American* anemone.

THE following remedy was much in vogue against the tooth-ach which is attended with a swelling: They boil gruel, of flour of maize, and milk; to this they add, whilst it is yet over the fire, some of the fat of hogs, or other suet, and stir it well, that every thing may mix equally. A handkerchief is then spread over the gruel, and applied as hot as possible to the swelled cheek, where it is kept till it is gone cool again. I have found, that this remedy has been very efficacious against a swelling; as it lessens the pain, abates the swelling, opens a gathering, if there be any, and procures a good discharge of the *Pus*.

I HAVE seen the *Iroquese* boil the inner bark of the *Sambucus Canadensis*, or *Canada Elder*, and put it on that part of the cheek in which the pain was most violent. This, I am told, often diminishes the pain.

AMONG the *Iroquese*, or *Five Nations*, upon the river *Mohawk*, I saw a young *Indian* woman, who, by frequent drinking of tea, had got a violent tooth-ach. To cure it, she boiled the *Myrica asplenii folia*, and tied it, as hot as she could bear it, on the whole cheek. She said, that

remedy had often cured the tooth-ach before.

January the 2d, 1749. BEFORE the *Europeans* under the direction of *Columbus*, came to the *West-Indies*, the *savages* or *Indians* (who lived there since times immemorial) were entirely unacquainted with iron, which appears very strange to us, as *North America*, almost in every part of it, contains a number of iron mines. They were therefore obliged to supply this want with sharp stones, shells, claws of birds and wild beasts, pieces of bones, and other things of that kind, whenever they intended to make hatchets, knives, and such like instruments. From hence it appears, that they must have led a very wretched life. The old *Swedes* who lived here, and had had an intercourse with the *Indians* when they were young, and at a time when they were yet very numerous in these parts, could tell a great many things concerning their manner of living. At this time the people find accidentally, by ploughing and digging in the ground, several of the instruments which the *Indians* employed, before the *Swedes* and other *Europeans* had provided them with iron tools. For it is observable that the *Indians* at present make use of no other tools, than such as are made of iron and other metals, and

and which they always get from the *Europeans:* Of this I shall be more particular, in its proper place. But having had an opportunity of seeing, and partly collecting a great many of the ancient *Indian* tools, I shall here describe them.

THEIR *hatchets* were made of stone. Their shape is similar to that of the wedges with which we cleave our wood, about half a foot long, and broad in proportion; they are made like a wedge, sharp at one end, but rather blunter than our wedges. As this hatchet must be fixed on a handle, there was a notch made all round the thick end. To fasten it, they split a stick at one end, and put the stone between it, so that the two halves of the stick come into the notches of the stone; then they tied the two split ends together with a rope or something like it, almost in the same way as smiths fasten the instrument with which they cut off iron, to a split stick. Some of these stone-hatchets were not notched or furrowed at the upper end, and it seems they only held those in their hands in order to hew or strike with them, and did not make handles to them. Most of the hatchets which I have seen, consisted of a hard rock-stone: but some were made of a fine, hard, black, apyrous stone. When the *Indians* intended to fell

a thick ſtrong tree, they could not make uſe of their hatchets, but for want of proper inſtruments employed fire. They ſet fire to a great quantity of wood at the roots of the tree, and made it fall by that means. But that the fire might not reach higher than they would have it, they faſtened ſome rags to a pole, dipped them into water, and kept continually waſhing the tree, a little above the fire. Whenever they intended to hollow out a thick tree for a canoe, they laid dry branches all along the ſtem of the tree, as far as it muſt be hollowed out. They then put fire to thoſe dry branches, and as ſoon as they were burnt, they were replaced by others. Whilſt theſe branches were burning, the *Indians* were very buſy with wet rags, and pouring water upon the tree, to prevent the fire from ſpreading too far on the ſides and at the ends. The tree being burnt hollow as far as they found it ſufficient, or as far as it could without damaging the canoe, they took the above deſcribed ſtone-hatchets, or ſharp flints, and quartzes, or ſharp ſhells, and ſcraped off the burnt part of the wood, and ſmoothened the boats within. By this means they likewiſe gave it what ſhape they pleaſed. Inſtead of cutting with a hatchet ſuch a piece of wood as was neceſſary for making

a canoe,

a canoe, they likewiſe employed fire. A canoe was commonly between thirty and forty feet long. The chief uſe of their hatchets was, according to the unanimous accounts of all the *Swedes*, to make good fields for maize-plantations; for if the ground where they intended to make a maize-field was covered with trees, they cut off the bark all round the trees with their hatchets, eſpecially at the time when they loſe their ſap. By that means the tree became dry, and could not take any more nouriſhment, and the leaves could no longer obſtruct the rays of the ſun from paſſing. The ſmaller trees were then pulled out by main force, and the ground was a little turned up with crooked or ſharp branches.

Instead of *knives* they were ſatisfied with little ſharp pieces of flint or quartz, or elſe ſome other hard kind of a ſtone, or with a ſharp ſhell, or with a piece of a bone which they had ſharpened.

At the end of their *arrows* they faſtened narrow angulated pieces of ſtone; they made uſe of them, having no iron to make them ſharp again, or a wood of ſufficient hardneſs: theſe points were commonly flints or quartzes, but ſometimes likewiſe another kind of a ſtone. Some employed the bones of animals, or the

claws of birds and beaſts. Some of theſe ancient harpoons are very blunt, and it ſeems that the *Indians* might kill birds and ſmall quadrupeds with them; but whether they could enter deep into the body of a great beaſt or of a man, by the velocity which they get from the bow, I cannot aſcertain; yet ſome have been found very ſharp and well made.

They had *ſtone peſtles*, about a foot long, and as thick as a man's arm. They conſiſt chiefly of a black ſort of a ſtone, and were formerly employed, by the *Indians*, for pounding maize, which has, ſince times immemorial, been their chief and almoſt their only corn. They had neither wind-mills, water-mills, nor hand-mills, to grind it, and did not ſo much as know a mill, before the *Europeans* came into the country. I have ſpoken with old *Frenchmen*, in *Canada*, who told me, that the *Indians* had been aſtoniſhed beyond expreſſion, when the *French* ſet up the firſt wind-mill. They came in numbers, even from the moſt diſtant parts, to view this wonder, and were not tired with ſitting near it for ſeveral days together, in order to obſerve it; they were long of opinion that it was not driven by the wind, but by the ſpirits who lived within it. They were partly under

under the ſame aſtoniſhment when the firſt water-mill was built. They formerly pounded all their corn or maize in hollow trees, with the above-mentioned peſtles, made of ſtone. Many *Indians* had only wooden peſtles. The blackiſh ſtone, of which the hatchets and peſtles are ſometimes made, is very good for a grindſtone, and therefore both the *Engliſh* and the *Swedes* employ the hatchets and peſtles chiefly as grindſtones, at preſent, when they can get them.

The old boilers or kettles of the *Indians*, were either made of clay, or of different kinds of pot-ſtone, *(Lapis ollaris)*. The former conſiſted of a dark clay, mixt with grains of white ſand or quartz, and burnt in the fire. Many of theſe kettles have two holes in the upper margin, on each ſide one, through which the *Indians* put a ſtick, and held the kettle over the fire, as long as it was to boil. Moſt of the kettles have no feet. It is remarkable that no pots of this kind have been found glazed, either on the outſide or the inſide. A few of the oldeſt *Swedes* could yet remember ſeeing the *Indians* boil their meat in theſe pots. They are very thin, and of different ſizes; they are made ſometimes of a greeniſh, and ſometimes of a grey

grey pot-ſtone, and ſome are made of another ſpecies of apyrous ſtone; the bottom and the margin are frequently above an inch thick. The *Indians*, notwithſtanding their being unacquainted with iron, ſteel, and other metals, have learnt to hollow out very ingeniouſly theſe pots or kettles of pot-ſtone.

THE old *tobacco-pipes* of the *Indians* are likewiſe made of clay, or pot-ſtone, or ſerpentine-ſtone. The firſt ſort are ſhaped like our tobacco-pipes, though much coarſer and not ſo well made. The tube is thick and ſhort, hardly an inch long, but ſometimes as long as a finger; their colour comes neareſt to that of our tobacco-pipes which have been long uſed. Their tobacco-pipes of pot-ſtone are made of the ſame ſtone as their kettles. Some of them are pretty well made, though they had neither iron nor ſteel. But beſides theſe kinds of tobacco-pipes, we find another ſort of pipes, which are made with great ingenuity, of a very fine, red pot-ſtone, or a kind of ſerpentine marble. They are very ſcarce, and ſeldom made uſe of by any other than the *Indian Sachems*, or elders. The fine red ſtone, of which theſe pipes are made, is likewiſe very ſcarce, and is found only in the country of thoſe

Indians who are called *Ingouez*, and who, according to father *Charlevoix*, live on the other side of the river *Mississippi* *. The *Indians* themselves commonly value a pipe of this kind as much as a piece of silver of the same size, and sometimes they make it still dearer. Of the same kind of stone commonly consists their *pipe of peace*, which the *French* call *calumet de paix*, and which they make use of in their treaties of peace, and alliances. Most authors who have wrote of these nations mention this instrument, and I intend to speak of it when an opportunity offers.

The *Indians* employ hooks made of bone, or bird's claws, instead of *fishing-hooks*. Some of the oldest *Swedes* here told me, that when they were young, a great number of *Indians* had been in this part of the country, which was then called *New Sweden*, and had caught fishes in the river *Delaware*, with these hooks.

They made fire by rubbing one end of a hard piece of wood continually against another dry one, till the wood began to smoke, and afterwards to burn.

Such were the tools of the antient *Indians*, and the use which they made of them,

* See his *Journal historique d'un voyage de l'Amerique.* Tome v. p. m. 311. and the 13th letter.

them, before the *Europeans* invaded this country, and before they (the *Indians*) were acquainted with the advantages of iron. *North America* abounds in iron-mines, and the *Indians* lived all about the country before the arrival of the *Europeans*, ſo that ſeveral places can be ſhewn in this country, where at preſent there are iron-mines, and where, not a hundred years ago, ſtood great towns or villages of the *Indians*. It is therefore very remarkable that the *Indians* did not know how to make uſe of a metal or ore which was always under their eyes, and on which they could not avoid treading every day. They even lived upon the very ſpots where iron ores were afterwards found, and yet they often went many miles in order to get a wretched hatchet, knife, or the like, as above deſcribed. They were forced to employ ſeveral days in order to ſharpen their tools, by rubbing them againſt a rock, or other ſtones, though the advantage was far from being equal to the labour. For they could never cut down a thick tree with their hatchets, and with difficulty they felled a ſmall one. They could not hollow out a tree with their hatchets, or do a hundredth part of the work which we can perform with eaſe, by the help of our iron hatchets.

hatchets. Thus we ſee how diſadvantageous the ignorance and inconſiderate contempt of uſeful arts is. Happy is the country which knows their full value!

January the 5th. CHRISTMAS-DAY was celebrated this day by the *Swedes* and *Engliſh*, for they kept then to the *old ſtile*.

January the 6th. THERE are a great number of hares in this country, but they differ from our *Swediſh* ones in their ſize, which is very ſmall, and but little bigger than that of a rabbit; they keep almoſt the ſame grey colour both in ſummer and winter, which our *Northern* hares have in ſummer only; the tip of their ears is always grey, and not black; the tail is likewiſe grey on the upper ſide, at all ſeaſons; they breed ſeveral times a year: in ſpring they lodge their young ones in hollow trees, and in ſummer, in the months of *June* and *July*, they breed in the graſs. When they are ſurpriſed they commonly take refuge in hollow trees, out of which they are taken by means of a crooked ſtick, or by cutting a hole into the tree, oppoſite to the place where they lie; or by ſmoke, which is occaſioned by making a fire on the outſide of the tree. On all theſe occaſions the greyhounds muſt be at hand. Theſe hares never bite, and can be touched without any danger. In day-time they uſually

uſually lie in hollow trees, and hardly ever ſtir from thence, unleſs they be diſturbed by men or dogs; but in the night they come out, and ſeek their food. In bad weather, or when it ſnows, they lie cloſe for a day or two, and do not venture to leave their retreats. They do a great deal of miſchief in the cabbage-fields; but apple-trees ſuffer infinitely more from them, for they peel off all the bark next to the ground. The people here agreed that the hares are fatter in a cold and ſevere winter, than in a mild and wet one, of which they could give me ſeveral reaſons, from their own conjectures. The ſkin is uſeleſs, becauſe it is ſo looſe, that it can be drawn off; for when you would ſeparate it from the fleſh, you need only pull at the fur, and the ſkin follows: theſe hares cannot be tamed. They were at all times, even in the midſt of winter, plagued with a number of common fleas *.

January the 16th. The common mice were in great abundance in the towns and in the country; they do as much miſchief as in the old countries. *Oldmixon* in his book,

* This account ſufficiently proves, that theſe hares are a ſpecies diſtinct from our *European* reddiſh grey kind, and alſo of that ſpecies or *variety* only, which in the northern parts of *Europe* and *Aſia* is white in winter, with black tipped ears, and has a grey coat in ſummer. Upon a cloſer examination naturaliſts will perhaps find more characters to diſtinguiſh them more accurately. F.

book, the *British Empire in America*, vol. i. p. 444, writes, that *North America* had neither rats nor mice before *European* ships brought them over. How far this is true I know not. It is undoubted, that in several desart places, where no man ever lived, I have seen and killed the common mice, in crevices of stones or mountains; and is it probable that all such mice as are spread in this manner, throughout the inland parts of the country, derive their origin from those which were brought over from *Europe?*

RATS likewise may be ranked among those animals which do great damage in this country. They live both in the cities and in the country, and destroy the provisions. Their size is the same with that of our rats, but their colour differs; for they are grey, or blue-grey. I enquired of the *Swedes*, Whether these rats had been here prior to the arrival of the *Europeans*, or whether they came over in the ships? But I could not get an answer which I might depend upon. All agreed, that a number of these dangerous and mischievous animals were every year brought to *America*, by ships from *Europe* and other countries. But Mr. *Bartram* maintained, that before the *Europeans* settled here, rats had been in the country; for he saw a great number of them on the high mountains,

tains, which are commonly called the *Blue Mountains*, where they lived among ſtones, and in the ſubterraneous grottoes which are in thoſe mountains. They always lie very cloſe in the day-time, and you hardly ever ſee one out; but at night they come out, and make a terrible noiſe. When the cold was very violent, they ſeemed quite torpid; for during the continuance of the cold weather, one could not hear the leaſt noiſe, or ſhrieking, occaſioned by them. It is to be obſerved, that neither the *Swedes* nor the *Engliſh* have any dark windows in their houſes here. There is hardly a dormer-window in the garret; but only looſe boards. The walls in the wooden houſes are frequently not cloſed, even with moſs; ſo that the rooms, though they have fires in them, are no warmer than the outſide apartment, or hall. The rooms where the ſervants ſleep have never any fire in them, though the winter is pretty ſevere ſometimes. The rats have, therefore, little or no warmth in winter; but as ſoon as a milder ſeaſon makes its appearance, they come out again. We obſerved ſeveral times this winter, that the rats were very active, and made an unuſual noiſe all night, juſt before a ſevere cold. It ſeems, they had ſome ſenſation of cold weather being at hand; and that they therefore eat ſufficiently, or ſtored up

up provisions. In mild weather, they were used to carry away apples, and other provisions: therefore, we could always conclude, with certainty, when the rats made an uncommon noise at night, or were extremely greedy, that a severe cold would ensue. I have already observed in the preceding volume, p. 312, that the grey squirrels in this country have the same quality. When these, and the common mice, eat maize, they do not consume the whole grains, but only the loose, sweet and soft kernel, and leave the rest.

January the 21st. The cold now equalled that of *Sweden*, though this country is so much more southerly. The *Celsian* or *Swedish* thermometer was twenty-two degrees below the freezing point, in the morning. As the rooms are without any shutters here, the cracks in the walls not closed with moss, and sometimes no fire-place or chimney in the room, the winters here must be very disagreeable to one who is used to our *Swedish* warm winter-rooms. But the greatest comfort here is, that the cold is of a very short duration. Some days of this month, the room which I lodged in was such, that I could not write two lines before the ink would freeze in my pen. When I did not write, I could not leave the ink-stand on the

table; but was forced to put it upon the hearth, or into my pocket. Yet, notwithſtanding it was ſo cold, as appears from the meteorological obſervations at the end of this volume, and though it ſnowed ſometimes for ſeveral days and nights together, and the ſnow lay near ſix inches high upon the ground, yet all the cattle are obliged to ſtay, day and night, in the fields, during the whole winter. For neither the *Engliſh* nor the *Swedes* had any ſtables; but the *Germans* and *Dutch* had preſerved the cuſtom of their country, and generally kept their cattle in ſtables during winter. Almoſt all the old *Swedes* ſay, that on their firſt arrival in this country, they made ſtables for their cattle, as is uſual in *Sweden*; but as the *Engliſh* came, and ſettled among them, and left their cattle in the fields all winter, as is cuſtomary in *England*, they left off their former cuſtom, and adopted the *Engliſh* one. They owned, however, that the cattle ſuffered greatly in winter, when it was very cold, eſpecially when it froze after a rain; and that ſome cattle were killed by it in ſeveral places, in the long winter of the year 1741. About noon, the cattle went out into the woods, where there were yet ſome leaves on the young oak; but they did not eat the leaves, and only bit off the extremities of the

branches, and the tops of the youngeſt oaks. The horſes went into the maize fields, and ate the dry leaves on the few ſtalks which remained. The ſheep ran about the woods, and on the corn fields. The chickens perched on the trees of the gardens, at night; for they had no particular habitations. The hogs were likewiſe expoſed to the roughneſs of the weather, within a ſmall incloſure.

A SMALL kind of birds, which the *Swedes* call *Snow-bird*, and the *Engliſh Chuck-bird*, came into the houſes about this time. At other times, they ſought their food along the roads. They are ſeldom ſeen, but when it ſnows. *Cateſby*, in his Natural Hiſtory of *Carolina*, calls it *Paſſer nivalis*; and Dr. *Linnæus*, in his *Syſtema Naturæ*, calls it *Emberiza hyemalis*.

THE river *Delaware* was now covered with ice oppoſite *Philadelphia*, and even ſomewhat lower, and the people could walk over it; but nobody ventured to ride over on horſeback.

January the 22d. THERE are partridges in this country; but they are not of the ſame kind with ours. The *Swedes* called them ſometimes *rapphons* (partridges), and ſometimes *aekkerhoens* (quails). Some of the *Engliſh* likewiſe called them partridges,

others quails. Their ſhape is almoſt the ſame with that of the *European* partridges, and their nature and qualities the ſame: I mean, they run and hide themſelves, when purſued. But they are ſmaller, and entirely different in colour. In this work I cannot inſert, at large, the deſcriptions which I have made of birds, inſects, quadrupeds, and plants; becauſe it would ſwell my volume too much. I only obſerve, that the feet are naked, and not hairy; the back is ſpotted with brown, black, and white; the breaſt is dark yellow; and the belly whitiſh, with black edges on the tips of the feathers. The ſize is nearly that of a hazel-hen, or *tetrao bonaſia*. Above each eye is a narrow ſtroke of whitiſh yellow. Theſe birds are numerous in *New Sweden*, i. e. this part of the country. On going but a little way, you meet with great coveys of them. However, they keep at a great diſtance from towns; being either extirpated, or frightened there by the frequent ſhooting. They are always in leſſer or greater coveys, do not fly very much, but run in the fields, and keep under the buſhes and near the incloſures, where they ſeek their food. They are reckoned very delicious food; and the people here prepare them in different ways. For that purpoſe they are caught, and ſhot

in

in great numbers. They are caught by putting up a ſieve, or a ſquare open box, made of boards, in the places they frequent. The people ſtrew ſome oats under the ſieve, and lift it up on one ſide by a little ſtick; and as ſoon as the partridges are got under the ſieve, in order to pick up the oats, it falls, and they are caught alive. Sometimes they get ſeveral partridges at once. When they run in the buſhes, you can come very near them, without ſtarting them. When they ſleep at night, they come together in an heap. They ſcratch in the buſhes and upon the field, like common chickens. In ſpring they make their neſts, either under a buſh or in the maize fields, or on the hills in the open air: they ſcratch ſome hay together, into which they lay about thirteen white eggs. They eat ſeveral ſorts of corn, and ſeeds of graſs. They have likewiſe been ſeen eating the berries of *ſumach*, or *rhus glabra*. Some people have taken them young, and kept them in a cage till they were tame: then they let them go; and they followed the chickens, and never left the court-yards.

The incloſures made uſe of in *Penſylvania* and *New Jerſey*, but eſpecially in *New York*, are thoſe, which on account of their ſerpentine form reſembling worms, are called

worm-fences in *Engliſh*. The poles which compoſe this fence are taken from different trees; but they are not all of equal duration: the red *cedar* is reckoned the moſt durable of any, for it holds out above thirty years; but it is very ſcarce, and grows only in a ſingle place hereabouts, ſo that no fences can be made of it. It is true, the fences about *Philadelphia* (which however are different from the *worm-fences*) are all made of red *cedar*; but it has been brought by water from *Egg-harbour*, where it grows in abundance. The ſupports on which the poles lie are made of the white *cedar*, or *Cupreſſus thyoides*, and the poles which are laid between them of the red *cedar* or *Juniperus Virginiana*. Next to the *cedar-wood*, *oak* and *cheſnut* are reckoned beſt. *Cheſnut* is commonly preferred, but it is not every where ſo plentiful as to be made into fences; in its ſtead they make uſe of ſeveral ſorts of *oak*. In order to make incloſures, the people do not cut down the young trees, as is common with us, but they fell here and there thick trees, cut them in ſeveral places, leaving the pieces as long as it is neceſſary, and ſplit them into poles of the uſual thickneſs; a ſingle tree affords a multitude of poles. Several old men in this country told me, that the *Swedes* on their arrival here, made

made such inclosures as are usual in *Sweden*, but they were forced to leave off in a few years time, because they could not get posts enough; for they had found by experience that a post being put into the ground would not last above four or six years before the part under ground was entirely rotten; but the chief thing was, that they could not get any switches for to tie them together; they made some of *hiccory*, which is one of the toughest trees in this country, and of the white *oak*; but in the space of a year or two the switches were rotten, and the fence fell in pieces of itself, therefore they were forced to give over making such inclosures. Several of the new comers again attempted, but with the same bad success, to make fences with posts and switches. The *Swedish* way of inclosing therefore will not succeed here. Thus the *worm-fences* are one of the most useful sorts of inclosures, especially as they cannot get any post, made of the woods of this country, to stay above six or eight years in the ground without rotting. The poles in this country are very heavy, and the posts cannot bear them well, especially when it blows a storm; but the *worm-fences* are easily put up again, when they are thrown down. Experience has

ſhewn that an incloſure made of *cheſnut* or white *oak* ſeldom holds out above ten or twelve years, before the poles and poſts are thoroughly rotten: when the poles are made of other wood, the fences hardly ſtand ſix or eight years. Conſidering how much more wood the *worm-fences* require, (ſince they run in bendings) than other incloſures which go in ſtrait lines, and that they are ſo ſoon uſeleſs, one may imagine how the foreſts will be conſumed, and what ſort of an appearance the country will have forty or fifty years hence, in caſe no alteration is made; eſpecially as wood is really ſquandered away in immenſe quantities, day and night all the winter, or nearly one half of the year, for fewel.

February the 8th. The *Muſk-rats*, ſo called by the *Engliſh* in this country, on account of their ſcent, are pretty common in *North America*; they always live near the water, eſpecially on the banks of lakes, rivers, and brooks. On travelling to places where they are, you ſee the holes which they have dug in the ground juſt at the water's edge, or a little above its ſurface. In theſe holes they have their neſts, and there they continue whenever they are not in the water in purſuit of food. The *Swedes* call

them *Désmans Rattor* *, and the *French*, *Rats musqués*. *Linnæus* calls this animal *Castor Zibethicus*. Their food is chiefly the muscles which ly at the bottom of lakes and rivers; you see a number of such shells near the entrance of their holes. I am told they likewise eat several kinds of roots and plants. They differ from the *European Musk-rat*, or *Linnæus's Castor Moschatus*. The teeth are the same in both; the tail of the *American* is compressed on the sides so, that one sharp edge goes upwards and the other downwards: the hind feet are not palmated, or joined by a moveable skin, but are peculiar for having on both sides of the feet, long, white, close, pectinated, off-standing hair, besides the short hair with which the feet are quite covered. Such hairs are on both sides of the toes, and do the same service in swimming as a web. Their size is that of a little cat, or to be more accurate, the length of the body is about ten inches, and the tail of the same length: the colour of the head, neck, back, sides, and of the outside of the thighs, is blackish brown; the hairs are soft and shin-

* *Désn* signifies *musk* in the *Swedish*, and in some provincial dialects of the *German* language; consequently *Désman-rat* is nothing but *Musk-rat*, and from hence Mr. *de Buffon* has formed his *Desmen* or *Russian Musk-rat*. F.

ing;

ing; under the neck, on the breaſts, and on the inſide of the thighs, they are grey. They make their neſts in the dykes that are erected along the banks of rivers to keep off the water from the adjoining meadows; but they often do a great deal of damage, by ſpoiling the dykes with digging, and opening paſſages for the water to come into the meadows; whereas *Beavers* ſtop up all the holes in a dyke or bank. They make their neſts of twigs and ſuch like things externally, and carry ſoft ſtuff into them for their young ones to ly upon. The *Swedes* aſſerted that they could never obſerve a diminution in their number, but believed that they were as numerous at preſent as formerly. As they damage the banks ſo conſiderably, the people are endeavouring to extirpate them, when they can find out their neſts; the ſkin is paid for, and this is an encouragement towards catching the animal. A ſkin of a *Muſk-rat* formerly coſt but three-pence, but at preſent they gave from ſix-pence to nine-pence. The ſkins are chiefly employed by hatters, who make hats of the hair, which are ſaid to be nearly as good as *Beaver* hats. The *Muſk-rats* are commonly caught in traps, with apples as baits. In the country of the *Iroqueſe*, I ſaw thoſe *Indians* following the holes

holes of the *Muſk-rats* by digging till they came to their neſts, where they killed them all. Nobody here eats their fleſh; I do not know whether the *Indians* eat it, for they are commonly not over nice in the choice of meat. The muſk-bag is put between the cloaths in order to preſerve them againſt worms. It is very difficult to extirpate theſe *Rats* when they are once ſettled in a bank. A *Swede*, however, told me, that he had freed his bank, or piece of dyke along the river, from them in the following manner: He ſought for all their holes, ſtopped them all up with earth, excepting one, on that ſide from whence the wind came. He put a quantity of ſulphur into the open entrance, ſet fire to it, and then cloſed the hole, leaving but a ſmall one for the wind to paſs through. The ſmoke of the ſulphur then entered their moſt remote neſts, and ſtifled all the animals. As ſoon as the ſulphur was burnt, he was obliged to dig up part of the ground in the bank, where they had their neſts; and he found them lie dead by heaps. He ſold the ſkins, and they paid his trouble, not to mention the advantage he got by clearing his bank of the *Muſk-rats*.

Beavers were formerly abundant in *New Sweden*, as all the old *Swedes* here told

told me. At that time they saw one bank after another raised in the rivers by beavers. But after the *Europeans* came over in great number, and cultivated the country better, the beavers have been partly killed, and partly extirpated, and partly are removed higher into the country, where the people are not so numerous. Therefore there is but a single place in *Pensylvania* where beavers are to be met with; their chief food is the bark of the beaver-tree, or *Magnolia glauca*, which they prefer to any other. The *Swedes* therefore put branches of this tree near the beaver-dykes, into traps, which they laid for the beavers, whilst they were yet plentiful; and they could almost be certain of good success. Some persons in *Philadelphia* have tamed beavers, so that they go a fishing with them, and they always come back to their masters. Major *Roderfert*, in *New York*, related that he had a tame beaver above half a year in his house, where he went about quite loose, like a dog. The major gave him bread, and sometimes fish, which he was very greedy of. He got as much water in a bowl as he wanted. All the rags and soft things he could meet with he dragged into a corner, where he was used to sleep, and made a bed of them. The

cat

cat in the house, having kittens, took possession of his bed, and he did not hinder her. When the cat went out, the beaver often took the kitten between his fore paws and held it to his breast to warm it, and doated upon it; as soon as the cat returned he gave her the kitten again. Sometimes he grumbled, but never did any hurt, or attempted to bite.

The *English* and the *Swedes* gave the name of *Mink* to an animal of this country, which likewise lives either in the water, or very near it. I have never had an opportunity to see any more than the skin of this animal. But the shape of the skin, and the unanimous accounts I have heard of it, make me conclude with much certainty, that it belonged to the genus of *weasels* or *mustelæ*. The greatest skin I ever saw, was one foot, eight inches long, a lesser one was about ten inches long, and about three inches, one third broad, before it was cut; the colour was dark brown, and sometimes almost black; the tail was bushy, as that of a marten; the hair was very close; and the ears short, with short hair. The length of the feet belonging to the lesser skin was about two inches long. I am told this animal is so similar to the *American polecat*, or *Viverra putorius*

rius, that they are hardly distinguishable *. I have had the following accounts given me of its way of living; it seldom appears in day-time, but at night it comes out of the hollow trees, on the banks of rivers. Sometimes it lives in the docks and bridges, at *Philadelphia*, where it is a cruel enemy to the rats. Sometimes it gets into the court-yards at night, and creeps into the chicken-house, through a small hole, where it kills all the poultry, and sucks their blood, but seldom eats one. If it meets with geese, fowls, ducks, or other birds on the road, it kills and devours them. It lives upon fish and birds. When a brook is near the houses, it is not easy to keep ducks and geese, for the *mink*, which lives near rivers, kills the young ones. It first kills as many as it can come at, and then it carries them off, and feasts upon them. In banks and dykes near the water, it likewise does mischief, with digging. To catch it the people put up traps, into which they put heads of birds, fishes, or other meat. The skin is sold in the towns, and at *Philadelphia*; they give twenty-pence and even two shillings a-piece for them, according

* The *Mink*, or *Minx*, is a kind of small otter, which is called by Dr. *Linnæus*, *Mustela lutreola*, in his system. i. p. 66. F.

according to their size. Some of the ladies get muffs made of these skins; but for the greatest part they are sent over to *England*, from whence they are distributed to other countries. The old *Swedes* told me that the *Indians* formerly used to eat all kinds of flesh, except that of the *mink*.

I have already mentioned something of the *Raccoon*; I shall here add more of the nature of this animal, in a place which is properly its native country *. The *English* call it every where by the name of *Raccoon*, which name they have undoubtedly taken from one of the *Indian* nations; the *Dutch* call it *Hespan*, the *Swedes*, *Espan*, and the *Iroquese*, *Attigbro*. It commonly lodges in hollow trees, lies close in the day-time, never going out but on a dark, cloudy day; but at night it rambles and seeks its food. I have been told by several people, that in bad weather, especially when it snows and blows a storm, the *Raccoon* lies in its hole for a week together without coming out once; during that time it lives by sucking and licking its paws. Its food are several sorts of fruit, such as maize, whilst the ears are soft. In gardens it often does a great deal of damage among the apples, chesnuts, plumbs, and wild

* The village of *Raccoon*.

wild grapes, which are what it likes beſt; among the poultry it is very cruel. When it finds the hens on their eggs, it firſt kills them, and then eats the eggs. It is caught by dogs, which trace it back to its neſt, in hollow trees, or by ſnares and traps, in which a chicken, ſome other bird, or a fiſh, is put as a bait. Some people eat its fleſh. It leaps with all its feet at once; on account of this and of ſeveral other qualities, many people here reckoned it to the genus of bears. The ſkin ſold for eighteen-pence, at *Philadelphia*. I was told that the *Raccoons* were not near ſo numerous as they were formerly; yet in the more inland parts they were abundant. I have mentioned the uſe which the hatters make of their furs; as likewiſe that they are eaſily tamed, that they are very greedy of ſweet-meats, &c. in the preceding volume. Of all the *North American* wild quadrupeds none can be tamed to ſuch a degree as this.

February the 10th. In the morning I went to *Philadelphia*, where I arrived towards night. On my arrival at the ferry upon the river *Delaware*, I found the river quite covered with drifts of ice, which at firſt prevented our croſſing the water. After waiting about an hour, and making an opening near the ferry, I, together with many

many more paſſengers, got over, before any more ſhoals came on. As it began to freeze very hard ſoon after the twelfth of *January* (or *New Year*, according to the old ſtyle) the river *Delaware* was covered with ice, which by the intenſeneſs of the froſt grew ſo ſtrong, that the people croſſed the river with horſes at *Philadelphia*. The ice continued till the eighth of *February*, when it began to get looſe, and the violent hurricane, which happened that night, broke it, and it was driven down ſo faſt, that on the twelfth of *February* not a ſingle ſhoal came down, excepting a piece or two near the ſhore.

Crows flew in great numbers together to-day, and ſettled on the tops of trees. During the whole winter we hardly obſerved one, though they are ſaid to winter there. During all this ſpring they commonly uſed to ſit at the tops of trees in the morning; yet not all together, but in ſeveral trees. They belong to the noxious birds in this part of the world, for they chiefly live upon corn. After the maize is planted or ſown, they ſcratch the grains out of the ground and eat them. When the maize begins to ripen, they peck a hole into the involucrum which ſurrounds the ear, by which means the maize is ſpoiled, as the rain paſſes

through the hole which they have made, and occaſions the putrefaction of the corn. Beſides eating corn, they likewiſe ſteal chickens. They are very fond of dead carcaſſes. Some years ago the government of *Penſylvania* had given three-pence, and that of *New Jerſey* four-pence premium for every head of a *Crow*, but this law has now been repealed, as the expences are too great. I have ſeen the young *Crows* of this kind in ſeveral places playing with tame ones whoſe wings were cut. The latter hopped about the fields, near the farm-houſes where they belonged to, but always returned again, without endeavouring to eſcape on any occaſion. Theſe *American Crows* are only a *variety* of the *Royſton Crow*, or *Linnæus's Corvus Cornix*.

February the 12th. In the afternoon I returned to *Raccoon* from *Philadelphia*.

On my journey to *Raccoon*, I attentively obſerved the trees which had yet any leaves left. The leaves were pale and dried up, but not all dropt from the following trees:

The *Beach tree*, *(Fagus ſylvatica)* whether great or ſmall; it always kept a conſiderable part of its leaves during the whole winter even till ſpring. The greater trees kept the lowermoſt leaves.

The

THE *white oak (Quercus alba)*. Moſt of the young trees which were not above a quarter of a yard in diameter, had the greateſt part of their leaves ſtill on them, but the old trees had loſt moſt of theirs, except in ſome places where they have got new ſhoots. The colour of the dry leaves was much paler in the white oak than in the black one.

THE *black oak* (as it is commonly called here). Dr. *Linnæus* calls it the red oak, *Quercus rubra*. Moſt of the young trees ſtill preſerved their dried leaves. Their colour was reddiſh brown, and darker than that of the white oak.

THE *Spaniſh oak*, which is a mere variety of the black oak. The young trees of this kind likewiſe keep their leaves.

A SCARCE *ſpecies of oak* which is known by its leaves having a triangular *apex* or top, whoſe angles terminate in a ſhort briſtle; the leaves are ſmooth below, but woolly above *. The young oaks of this ſpecies had ſtill their leaves.

When I came into any wood where the above kinds of oaks were only twenty years, and even not ſo old, I always found the leaves on them.

* This ſeems to be nothing but a variety of the *Quercus rubra, Linn.* F.

It ſeems that Providence has, beſides other views, aimed to protect ſeveral ſorts of birds, it being very cold and ſtormy about this time, by preſerving even the dry leaves on theſe trees. I have this winter at ſeveral times ſeen birds hiding in the trees covered with old leaves during a ſevere cold or ſtorm.

February the 13th. As I began to dig a hole to-day, I found ſeveral inſects which were crept deep into the ground in order to paſs the winter. As ſoon as they came to the air, they moved their limbs a little, but had not ſtrength ſufficient for creeping, except the black ants, which crept a little, though ſlowly.

Formica *nigra*, or *the black ant*, were pretty numerous, and ſomewhat lively. They lay about ten inches below the ſurface.

Carabus *latus*. Some of theſe lay at the ſame depth with the ants. This is a very common inſect in all *North America*.

Scarabæus; cheſnut-coloured, with a hairy thorax; the elytræ ſhorter than the abdomen, with ſeveral longitudinal lines, beſet with hair. It is ſomething ſimilar to the *cock-chaffer*, but differs in many reſpects. I found it very abundant in the ground.

GRYLLUS *campestris*, or the field-cricket: They lay ten inches deep; they were quite torpid, but as soon as they came into a warm place they revived and were quite lively. In summer I have found these crickets in great plenty in all parts of *North America* where I have been. They leaped about on the fields, and made a noise like that of our common house-crickets, so that it would be difficult to distinguish them by their chirping. They sometimes make so great a noise, that it causes pain in the ears, and even two people cannot understand each other. In such places where the rattle-snakes live, the field-crickets are very disagreeable, and in a manner dangerous, for their violent chirping prevents the warning, which that horrid snake gives with its rattle, from reaching the ear, and thus deprives one of the means of avoiding it. I have already mentioned that they likewise winter sometimes in chimnies *. Here they ly all winter in the ground, but at the beginning of *March*, as the air was grown warm, they came out of their holes, and began their music, though at first it was but very faint and rarely heard. When we were forced on our travels to sleep in uninhabited places, the crickets had got into the folds of our

* See page 10.

clothes, so that we were obliged to stop an hour every morning in examining our clothes, before we could get rid of them.

THE *red ants (Formica rufa)* which in *Sweden* make the great ant-hills, I likewise found to-day and the following day; they live not in the ground, for when my servant *Yungstroem* cut down old dry trees, he met with a number of them in the cracks of the tree. These cracks were at the height of many yards in the tree, and the ants were crept so high, in order to find their winter habitation: As soon as they came into a warm place, they began to stir about very briskly.

February the 14th. THE *Swedes* and the *English* gave the name of *blue bird* to a very pretty little bird, which was of a fine blue colour. *Linnæus* calls it *Motacilla Sialis*. *Catesby* has drawn it in his *Natural history of Carolina*, vol. I. pl. 47, and described it by the name of *Rubecula Americana cærulea*; and *Edwards* has represented it in his *Natural history of birds*, plate and page 24. In my own journal I called it *Motacilla cærulea nitida, pectore rufo, ventre albo*. In *Catesby*'s plate I must observe, that the colour of the breast ought to be dirty red or ferruginous; the tibiæ and feet black as jet; the bill too should be quite black; the blue colour in general

general ought to be much deeper, more lively and shining; no bird in *Sweden* has so shining and deep a blue colour as this: The jay has perhaps a plumage like it. The food of the blue bird is not merely insects, he likewise feeds upon plants; therefore in winter, when no insects are to be met with, they come to the farm-houses in order to subsist on the seeds of hay, and other small grains.

RED-*bird* is another species of small bird. *Catesby* has likewise figured it *. Dr. *Linnæus* calls it, *Loxia Cardinalis*. It belongs to that class of birds which are enemies to bees, lying in wait for them and eating them. I fed a cock for five months together in a cage; it eat both maize and buck-wheat, for I gave it nothing else. By its song it attracted others of its species to the court-yard, and after we had put some maize on the ground under the window where I had it, the others came there every day to get their food; it was then easy to catch them by means of traps. Some of them, especially old ones, both cocks and hens, would die with grief on being put into cages. Those on the other hand which were grown tame, began to sing exceedingly

* See *Catesby's Natural history*, vol. I. pl. 38. *Coccothraustes rubra.*

ſweet. Their note very nearly reſembles that of our *European* nightingale, and on account of their agreeable ſong, they are ſent abundantly to *London*, in cages. They have ſuch ſtrength in their bill that when you hold your hand to them they pinch it ſo hard as to cauſe the blood to iſſue forth. In ſpring they ſit warbling on the tops of the higheſt trees in the woods, in the morning. But in cages they ſit quite ſtill for an hour; the next hour they hop up and down, ſinging; and ſo they go on alternately all day.

February the 17th. CRANES (*Ardea Canadenſis*) were ſometimes ſeen flying in the day-time, to the northward. They commonly ſtop here early in ſpring, for a ſhort time, but they do not make their neſts here, for they proceed on more to the north. Certain old *Swedes* told me, that in their younger years, as the country was not yet much cultivated, an incredible number of cranes were here every ſpring; but at preſent they are not ſo numerous. Several people who have ſettled here, eat their fleſh, when they can ſhoot them. They are ſaid to do no harm to corn, or the like.

February the 23d. THIS morning I went

went down to *Penn's Neck*, and returned in the evening.

Snow lay yet in ſeveral parts of the woods, eſpecially where the trees ſtood very thick, and the ſun could not make its way: however it was not above four inches deep. All along the roads was ice, eſpecially in the woods, and therefore it was very difficult to ride horſes, which were not ſharp-ſhoed. The people who are ſettled here know little of ſledges, but ride on horſeback to church in winter, though the ſnow is ſometimes near a foot deep. It lays ſeldom above a week before it melts, and then ſome freſh ſnow falls.

A ſpecies of birds, called by the *Swedes*, *maize-thieves*, do the greateſt miſchief in this country. They have given them that name, becauſe they eat maize, both publicly and ſecretly, juſt after it is ſown and covered with the ground, and when it is ripe. The *Engliſh* call them *blackbirds*. There are two ſpecies of them, both deſcribed and drawn by *Cateſby* *. Though they are very different in ſpecies, yet there is

* See *Cateſby*'s nat. hiſt. of *Carolina*, vol. i. tab. 12. *The purple daw*, and tab. 13. *the red-winged ſtarling*: but as both theſe drawings are in a very expenſive work, we have, from ſpecimens lately brought over from *America*, made a new drawing, which repreſents them both, and it is engraved here, tab. I. F.

is so great a friendship between them, that they frequently accompany each other in mixed flocks. However, in *Pensylvania*, the first sort are more obvious, and often fly together, without any of the red-winged *stares*. The first sort, or the purple daws, bear, in many points, so great a likeness to the daw, the stare, and the thrush, that it is difficult to determine to which genus they are to be reckoned, but seem to come nearest to the stare; for the bill is exactly the same with that of the thrush, but the tongue, the flight, their sitting on the trees, their song and shape, make it entirely a stare; at a distance they look almost black, but close by they have a very blue or purple cast, but not so much as *Catesby*'s print: their size is that of a stare; the bill is conic, almost subulated, strait, convex, naked at the base, black, with almost equal mandibles, the upper being only a very little longer than the lower; the nostrils are oblong, yet a little angulated, so as to form almost squares; they are placed obliquely at the base of the bill, and have no hair; there is a little horny knob, or a small prominence on the upper side of them; the tongue is sharp and bifid at the point; the iris of the eyes is pale; the forehead, the crown, the nucha, the

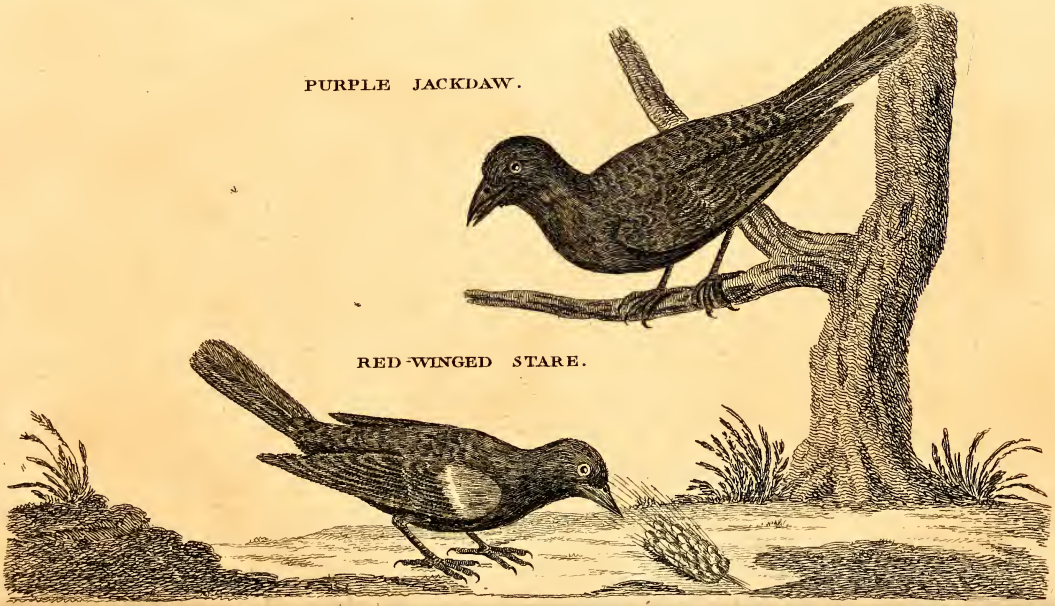
the upper part and the sides of the neck are of an obscure blue and green shining colour; the sides of the head under the eyes are obscurely blue; all the back and coverts of the wings are purple; the upper coverts of the tail are not of so conspicuous a purple colour, but as it were blackened with soot; the nine primary quill-feathers are black; the other secundary ones are likewise black, but their outward margin is purple; the twelve tail feathers have a blackish purple colour, and their tips are round; those on the outside are the shortest, and the middle extremely long. When the tail is spread, it looks round towards the extremity. The throat is blueish green, and shining; the breast is likewise black or shining green, according as you turn it to the light; the belly is blackish, and the vent feathers are obscurely purple-coloured; the parts of the breast and belly which are covered by the wings, are purple-coloured; the wings are black below, or rather sooty; and the thighs have blackish feathers; the legs *(tibiæ)*, and the toes are of a shining black. It has four toes, as most birds have. The claws are black, and that on the back toe is longer than the

the reſt. Dr. *Linnæus* calls this bird *Gracula Quiſcula.*

A FEW of theſe birds are ſaid to winter in ſwamps, which are quite overgrown with thick woods; and they only appear in mild weather. But the greateſt number go to the ſouth at the approach of winter. To-day I ſaw them, for the firſt time this year. They flew in great flocks already. Their chief and moſt agreeable food is maize. They come in great ſwarms in ſpring, ſoon after the maize is put under ground. They ſcratch up the grains of maize, and eat them. As ſoon as the leaf comes out, they take hold of it with their bills, and pluck it up, together with the corn or grain; and thus they give a great deal of trouble to the country people, even ſo early in ſpring. To leſſen their greedineſs of maize, ſome people dip the grains of that plant in a decoct of the root of the *veratrum album*, or white hellebore, (of which I ſhall ſpeak in the ſequel) and plant them afterwards. When the maize-thief eats a grain or two, which are ſo prepared, his head is diſordered, and he falls down: this frightens his companions, and they dare not venture to the place again. But they repay themſelves amply towards autumn, when the maize grows ripe; for at that time, they

they are continually feasting. They assemble by thousands in the maize-fields, and live at discretion. They are very bold; for when they are disturbed, they only go and settle in another part of the field. In that manner, they always go from one end of the field to the other, and do not leave it till they are quite satisfied. They fly in incredible swarms in autumn; and it can hardly be conceived whence such immense numbers of them should come. When they rise in the air they darken the sky, and make it look quite black. They are then in such great numbers, and so close together, that it is surprising how they find room to move their wings. I have known a person shoot a great number of them on one side of a maize-field, which was far from frightening the rest; for they only just took flight, and dropped at about the distance of a musket-shot in another part of the field, and always changed their place when their enemy approached. They tired the sportsman, before he could drive them from off the maize, though he killed a great many of them at every shot. They likewise eat the seeds of the *aquatic tare-grass (Zizania aquatica)* commonly late in autumn, after the maize is got in. I am told, they likewise eat buck-wheat, and oats. Some people say,

ſay, that they even eat wheat, barley, and rye, when preſſed by hunger; yet, from the beſt information I could obtain, they have not been found to do any damage to theſe ſpecies of corn. In ſpring, they ſit in numbers on the trees, near the farms; and their note is pretty agreeable. As they are ſo deſtructive to maize, the odium of the inhabitants againſt them is carried ſo far, that the laws of *Penſylvania* and *New Jerſey* have ſettled a premium of three-pence a dozen for dead maize-thieves. In *New England*, the people are ſtill greater enemies to them; for Dr. *Franklin* told me, in the ſpring of the year 1750, that, by means of the premiums which have been ſettled for killing them in *New England*, they have been ſo extirpated, that they are very rarely ſeen, and in a few places only. But as, in the ſummer of the year 1749, an immenſe quantity of worms appeared on the meadows, which devoured the graſs, and did great damage, the people have abated their enmity againſt the maize-thieves; for they thought they had obſerved, that thoſe birds lived chiefly on theſe worms before the maize is ripe, and conſequently extirpated them, or at leaſt prevented their ſpreading too much. They ſeem therefore to be entitled, as it were, to a reward for their trou-


PURPLE JACKDAW.
RED-WINGED STARE.

ble. But after these enemies and destroyers of the worms (the maize-thieves) were extirpated, the worms were more at liberty to multiply; and therefore they grew so numerous, that they did more mischief now than the birds did before. In the summer 1749, the worms left so little hay in *New England*, that the inhabitants were forced to get hay from *Pensylvania*, and even from *Old England*. The maize-thieves have enemies besides the human species. A species of little hawks live upon them, and upon other little birds. I saw some of these hawks driving up the maize-thieves, which were in the greatest security, and catching them in the air. Nobody eats the flesh of the purple maize-thieves or daws *(Gracula quiscula)*; but that of the red-winged maize-thieves, or stares *(Oriolus Phœniceus)* is sometimes eaten. Some old people have told me, that this part of *America*, formerly called *New Sweden*, still contained as many maize-thieves as it did formerly. The cause of this they derive from the maize, which is now sown in much greater quantity than formerly; and they think that the birds can get their food with more ease at present.

The *American* whortleberry, or the *Vaccinium hispidulum*, is extremely abundant over

over all *North America*, and grows in such places where we commonly find our whortle-berries in *Sweden*. The *American* ones are bigger, but in most things so like the *Swedish* ones, that many people would take them to be mere varieties. The *English* call them *Cranberries*, the *Swedes Tranbær*, and the *French* in *Canada Atopa*, which is a name they have borrowed from the *Indians*. They are brought to market every *Wednesday* and *Saturday* at *Philadelphia*, late in autumn. They are boiled and prepared in the same manner as we do our red whortle-berries, or *Vaccinium vitis idæa*; and they are made use of during winter, and part of summer, in tarts and other kinds of pastry. But as they are very sour, they require a deal of sugar; but that is not very dear, in a country where the sugar-plantations are not far off. Quantities of these berries are sent over, preserved, to *Europe*, and to the *West Indies*.

March the 2d. *Mytilus anatinus*, a kind of muscle-shells, was found abundantly in little furrows, which crossed the meadows. The shells were frequently covered on the outside, with a thin crust of particles of iron, when the water in the furrows came from an iron mine. The *Englishmen* and *Swedes*

Swedes settled here seldom made any use of these shells; but the *Indians* who formerly lived here broiled them and ate the flesh. Some of the *Europeans* eat them sometimes.

The snow still remained in some parts of the wood, where it was very shady, but the fields were quite free from it. The cows, horses, sheep, and hogs, went into the woods, and sought their food, which was as yet very trifling.

March the 3d. The *Swedes* call a species of little birds, *Snofogel*, and the *English* call it *Snow-bird*. This is Dr. *Linnæus*'s *Emberiza hyemalis*. The reason why it is called snow-bird is because it never appears in summer, but only in winter, when the fields are covered with snow. In some winters they come in as great numbers as the maize-thieves, fly about the houses and barns, into the gardens, and eat the corn, and the seeds of grass, which they find scattered on the hills.

At eight o'clock at night we observed a meteor, commonly called a *snow-fire* *. I have described this meteor in the memoirs of the Royal *Swedish* Academy of Sciences, see the volume for the year 1752, page 154, 155.

* Probably nothing but an *Aurora borealis*.

WILD *Pigeons, (Columba migratoria*)*, flew in the woods, in numbers beyond conception, and I was assured that they were more plentiful than they had been for several years past. They came this week, and continued here for about a fortnight, after which they all disappeared, or advanced further into the country, from whence they came. I shall speak of them more particularly in another place.

March the 7th. SEVERAL people told me, that it was a certain sign of bad weather here when a thunder-storm arose in the south or south west, if it spread to the east and afterwards to the north: but that on the contrary, when it did not spread at all, or when it spread both east and west, though it should rise in south or south west, yet it would prognosticate fair weather. To-day it was heard in south west, but it did not spread at all. See the meteorological observations, at the end of this volume.

TILL now the frost had continued in the ground, so that if any one had a mind to dig a hole he was forced to cut it through with a pick-ax. However it had not penetrated

* Of this *Pigeon of Passage* we have given here a plate, tab. ii. taken from a parcel of birds, lately brought from *America*, of which we were favoured with a fine specimen. F.

AMERICAN MIGRATORY PIDGEON.

netrated above four inches deep. But to-day it was quite gone out. This made the soil so soft, that on riding, even in the woods, the horse sunk in very deep.

I often enquired among the old *Englishmen* and *Swedes*, whether they had found that any trees were killed in very severe winters, or had received much hurt. I was answered, that young hiccory trees are commonly killed in very cold weather; and the young black oaks likewise suffer in the same manner. Nay sometimes black oaks, five inches in diameter, were killed by the frost in a severe winter, and sometimes, though very seldom, a single mulberry-tree was killed. Peach-trees very frequently die in a cold winter, and often all the peach-trees in a whole district are killed by a severe frost. It has been found repeatedly, with regard to these trees, that they can stand the frost much better on hills, than in vallies; insomuch, that when the trees in a valley were killed by frost, those on a hill were not hurt at all. They assured me that they had never observed that the black walnut-tree, the sassafras, and other trees, had been hurt in winter. In regard to a frost in spring, they had observed at different times, that a cold night or two happened often after the trees were

furniſhed with pretty large leaves, and that by this moſt of the leaves were killed. But the leaves thus killed have always been ſupplied by freſh ones. It is remarkable that in ſuch cold nights the froſt acts chiefly upon the more delicate trees, and in ſuch a manner, that all the leaves, to the height of ſeven and even of ten feet from the ground, were killed by the froſt, and all the top remained unhurt. Several old *Swedes* and *Engliſhmen* aſſured me they had made this obſervation, and the attentive engineer, Mr. *Lewis Evans*, has ſhewn it me among his notes. Such a cold night happened here, in the year 1746, in the night between the 14th and 15th of *June*, new ſtyle, attended with the ſame effect, as appears from Mr. *Evans*'s obſervations. The trees which were then in bloſſom, had loſt both their leaves and their flowers in theſe parts which were neareſt the ground; ſometime after they got freſh leaves, but no new flowers. Further it is obſervable, that the cold nights which happen in ſpring and ſummer never do any hurt to high grounds, damaging only the low and moiſt ones. They are likewiſe very perceptible in ſuch places where limeſtone is to be met with, and though all the other parts of the country be not viſited by ſuch cold

cold nights in a summer, yet those where limestone lies have commonly one or two every summer. Frequently the places where the limestone lies are situated on a high ground; but they suffer notwithstanding their situation; whilst a little way off in a lower ground, where no limestone is to be found, the effects of the cold nights are not felt. Mr. *Evans* was the first who made this observation, and I have had occasion at different times to see the truth of it, on my travels, as I shall mention in the sequel. The young hiccory-trees have their leaves killed sooner than other trees, in such a cold night, and the young oaks next; this has been observed by other people, and I have found it to be true, in the years 1749 and 1750.

March the 11th. Of the genus of *Wood-peckers*, we find here all those, which *Catesby* in his first volume of the *Natural History of Carolina*, has drawn and described. I shall only enumerate them, and add one or two of their qualities; but their description at large I defer for another occasion.

Picus principalis, the *King of the Wood-peckers*, is found here, though very seldom, and only at a certain season.

Picus pileatus, the crested *Wood-pecker*; this I have already mentioned.

Picus auratus, the *gold-winged Wood-pecker*: This species is plentiful here, and the *Swedes* call it *Hittock*, and *Piut*; both these names have a relation to its note; it is almost continually on the ground, and is not observed to pick in the trees; it lives chiefly on insects, but sometimes becomes the prey of hawks; it is commonly very fat, and its flesh is very palatable. As it stays all the year, and cannot easily get insects in winter, it must doubtless eat some kinds of grass or plants in the fields. Its form, and some of its qualities, make it resemble a cuckow.

Picus Carolinus, the *Carolina Wood-pecker*. It lives here likewise, and the colour of its head is of a deeper and more shining red than *Catesby* has represented it, vol. i. p. 19. t. 19.

Picus villosus, the *spotted, hairy, middle-sized Wood-pecker* is abundant here; it destroys the apple-trees by pecking holes into them.

Picus erythrocephalus, the *red-headed Wood-pecker*. This bird was frequent in the country, and the *Swedes* called it merely *Hackspick*, or *Wood pecker*. They give the same name to all the birds which I now enumerate, the gold-winged wood-pecker excepted. This species is destructive

tive to maize-fields and orchards, for it pecks through the ears of maize, and eats apples. In ſome years they are very numerous, eſpecially where ſweet apples grow, which they eat ſo far, that nothing but the mere peels remain. Some years ago there was a premium of two pence *per* head, paid from the public funds, in order to extirpate this pernicious bird, but this law has been repealed. They are likewiſe very fond of acorns. At the approach of winter they travel to the ſouthward. But when they ſtay in numbers in the woods, at the beginning of winter, the people look upon it as a ſign of a pretty mild winter.

Picus varius, the *leſſer, ſpotted, yellow-bellied Wood-pecker*. Theſe birds are much more numerous than many people wiſhed; for this, as well as the preceding and ſucceeding ſpecies, are very hurtful to apple-trees.

Picus pubeſcens, or the *leaſt ſpotted Wood-pecker*. This ſpecies abounds here. Of all the wood-peckers it is the moſt dangerous to orchards, becauſe it is the moſt daring. As ſoon as it has pecked a hole into the tree, it makes another cloſe to the firſt, in a horizontal direction, proceeding till it has pecked a circle of holes

round the tree. Therefore the apple-trees in the orchards here have several rings round their stems, which lie very close above each other, frequently only an inch distant from each other. Sometimes these wood-peckers peck the holes so close, that the tree dries up. This bird, as *Catesby* remarks, is so like the lesser spotted wood-pecker, in regard to its colour and other qualities, that they would be taken for the same bird, were not the former (the *Picus pubescens*) a great deal less. They agree in the bad quality, which they both possess, of pecking holes into the apple-trees.

Rana ocellata are a kind of frogs here, which the *Swedes* call, *Sill-hoppetosser*, i. e. *Herring-hoppers*, and which now began to quack in the evening, and at night, in swamps, pools, and ponds. The name which the *Swedes* give them is derived from their beginning to make their noise in spring, at the same time when the people here go catching what are called herrings, which however differ greatly from the true *European* herrings. These frogs have a peculiar note, which is not like that of our *European* frogs, but rather corresponds with the chirping of some large birds, and can nearly be expressed by *picet*. With this noise they continued throughout a great

part

part of spring, beginning their noise soon after sun-setting, and finishing it just before sun-rising. The sound was sharp, but yet so loud that it could be heard at a great distance. When they expected rain they cried much worse than commonly, and began in the middle of the day, or when it grew cloudy, and the rain came usually six hours after. As it snowed on the 16th of the next month, atd blew very violently all day, there was not the least sign of them at night, and during the whole time that it was cold, and whilst the snow lay on the fields, the frost had so silenced them, that we could not hear one; but as soon as the mild weather returned, they began their noise again. They were very timorous, and it was difficult to catch them; for as soon as a person approached the place where they lived, they are quite silent, and none of them appeared. It seems that they hide themselves entirely under water, except the tip of the snout, when they cry. For when I stepped to the pond where they were in, I could not observe a single one hopping into the water. I could not see any of them before I had emptied a whole pool, where they lodged in. Their colour is a dirty green, variegated with spots of brown. When they

they are touched they make a noiſe and moan; they then ſometimes aſſume a form, as if they had blown up the hind part of the back, ſo that it makes a high elevation; and then they do not ſtir, though touched. When they are put alive into ſpirits of wine, they die within a minute.

March the 12th. THE bird which the *Engliſh* and *Swedes* in this country call *Robin-red-breaſt**, is found here all the year round. It is a very different bird from that which in *England* bears the ſame name. It is *Linnæus*'s *Turdus migratorius*. It ſings very melodiouſly, is not very ſhy, but hops on the ground, quite cloſe to the houſes.

THE *Hazels (Corylus avellana)* were now opening their bloſſoms. They ſucceeded beſt in a rich mould, and the *Swedes* reckoned it a ſign of a good ſoil where they found them growing.

March the 13th. THE *alder (Betula Alnus)* was juſt bloſſoming.

THE *Dracontium foetidum* grew plentifully in the marſhes and began to flower. Among the ſtinking plants, this is the moſt fœtid; its nauſeous ſcent was ſo ſtrong, that I could hardly examine the flower; and

* Of this bird we have given a figure in plate 3, where likewiſe the *Mocking-bird* is repreſented; both drawn after ſpecimens lately brought from *America*, and which we were favoured with. F.

MOCKING BIRD.

REDBREASTED THRUSH.

and when I smelled a little too long at it, my head ached. The *Swedes* call it *Byornblad* (bear's-leaf) or *Byorn-retter* (bear's-root.) The *English* call it *Polecat-root*, because its effluvia are as nauseous and fœtid, as those of the polecat, which I have mentioned before. The flowers are purple-coloured; when they are in full flower, the leaves begin to come out of the ground; in summer the cattle do not touch it. Dr. *Colden* told me, that he had employed the root in all cases where the root of the arum is made use of, especially against the scurvy, &c. The *Swedish* name it got, because the bears, when they leave their winter habitations, are fond of it in spring: It is a common plant in all *North America*.

The *Draba verna* was abundant here, and now appeared in flower.

The *Veratrum album* was very common in the marshes, and in low places over all *North America*. The *Swedes* here call it *Dack*, *Dackor* or *Dackretter*, that is puppet-root, because the children make puppets of its stalks and leaves. The *English* call it *Itch-reed* or *Ellebore*. It is a poisonous plant, and therefore the cattle never touch it; however it sometimes happens that the cattle are deceived in the beginning of spring, when the pastures are bare, and eat of the fine broad green leaves of this plant, which

which come up very early; but ſuch a meal frequently proves fatal to them. Sheep and geeſe have likewiſe often been killed with it. By means of its root, the maize is preſerved from the greedineſs of voracious birds, in the following manner: The roots are boiled in water, into which the maize is put as ſoon as the water is quite cool; the maize muſt ly all night in it, and is then planted as uſual. When the maize-thieves, crows, or other birds, pick up or pluck out the grains of maize, their heads grow delirious, and they fall, which ſo frightens the reſt that they never venture on the field again; when thoſe which have taſted the grains recover, they leave the field, and are no more tempted to viſit it again. By thus preparing maize, one muſt be very careful that no other creatures touch it; for when ducks or fowls eat a grain or two of the maize which is thus ſteeped, they become very ſick; but if they ſwallow a conſiderable quantity they die. When the root is thrown away raw, no animal eats it; but when it is put out boiled, its ſweet taſte tempts the beaſts to eat it. Dogs have been ſeen to eat a little of it, and have been very ſick after it; however they have recovered after a vomit, for when animals cannot free themſelves of it by this means, they often die. Some people boil the root, and

waſh

wash the scorbutic parts with the water or decoct. This is said to cause some pain, and even a plentiful discharge of urine, but it re-establishes the patient. When the children here are plagued with vermin, the women boil this root, put the comb into the decoction, and comb the head with it, and this kills them most effectually.

March the 17th. At the first arrival of the *Swedes* in this country, and long after that time, it was filled with *Indians*. But as the *Europeans* proceeded to cultivate the land, the *Indians* sold their land, and went further into the country. But in reality few of the *Indians* really left the country in this manner; most of them ended their days before, either by wars among themselves, or by the small-pox, a disease which the *Indians* were unacquainted with before their commerce with the *Europeans*, and which since that time has killed incredible numbers of them. For though they can heal wounds and other external hurts, yet they know not how to proceed with fevers, or in general with internal diseases. One can imagine, how ill they would succeed with the cure of the small-pox, when as soon as the pustules appeared, they leaped naked into the cold water of the rivers, lakes, or fountains, and either dived over head

head into it, or poured it over their body in great abundance, in order to cool the heat of the fever. In the ſame manner they carry their children, when they have the ſmall-pox, into the water and duck them*. But brandy has killed moſt of the *Indians*. This liquor was likewiſe entirely unknown to them, before the *Europeans* came hither; but after they had taſted it, they could never get enough of it. A man can hardly have a greater deſire of a thing, than the *Indians* have of brandy. I have heard them ſay, that to die by drinking brandy, was a deſirable

* Profeſſor *Kalm* wrote this, when the truly laudable method of treating the ſmall-pox with a cold regimen, was not yet adopted; and he thought therefore, the way in which the *Americans* treated this diſeaſe, was the cauſe of its being ſo deleterious. But when the *Khalmucks*, in the *Ruſſian* dominions, get the ſmall-pox, it has been obſerved, that very few eſcape. Of this I believe no other reaſon can be alledged, than that the ſmall-pox is always dangerous, either when the open pores of the human ſkin are too numerous, which is cauſed by opening them in a warm water bath; or when they are too much cloſed, which is the caſe with all the nations, that are dirty and greaſy. All the *American Indians* rub their body with oils, the *Khalmucks* never waſh themſelves, and rub their bodies and their fur coats with greaſe; the *Hottentots* are I believe known to be patterns of filthineſs, their bodies being richly anointed with their ornamental greaſy ſheep guts; this ſhuts up all the pores; hinders perſpiration entirely, and makes the ſmall-pox always lethal among theſe nations; to which we may yet add the too frequent uſe of ſpirituous inflammatory liquors, ſince their acquaintance with the *Europeans*. F.

desirable and an honourable death; and indeed 'tis no very uncommon thing to kill themselves by drinking this liquor to excess.

THE food of these *Indians* was very different from that of the inhabitants of the other parts of the world. Wheat, rye, barley, oats, and rice-groats, were quite unknown in *America*. In the same manner it is with regard to the fruits and herbs which are eaten in the old countries. The maize, some kinds of beans, and melons, made almost the whole of the *Indian* agriculture and gardening; and dogs were the only domestic animals in *North America*. But as their agriculture and their gardening were very trifling, and they could hardly live two months in a year upon their produce, they were forced to apply to hunting and fishing, which at that time, and even at present, are their chief subsistence, and to seek some of the wild plants and trees here. Some of the old *Swedes* were yet alive, who in their younger years had an intercourse with the *Indians*, and had seen the minutiæ of their œconomy. I was therefore desirous of knowing which of the spontaneous herbs they made use of for food at that time; and all the old men agreed that the following plants were what they chiefly consumed:

HOPNISS or *Hapniſs* was the *Indian* name of a wild plant, which they ate at that time. The *Swedes* ſtill call it by that name, and it grows in the meadows in a good ſoil. The roots reſemble potatoes, and were boiled by the *Indians*, who eat them inſtead of bread. Some of the *Swedes* at that time likewiſe ate this root for want of bread. Some of the *Engliſh* ſtill eat them inſtead of potatoes. Mr. *Bartram* told me, that the *Indians* who live farther in the country do not only eat theſe roots, which are equal in goodneſs to potatoes, but likewiſe take the peaſe which ly in the pods of this plant, and prepare them like common peaſe. Dr. *Linnæus* calls the plant *Glycine Apios*.

KATNISS is another *Indian* name of a plant, the root of which they were likewiſe accuſtomed to eat, when they lived here. The *Swedes* ſtill preſerve this name. It grows in low, muddy and very wet ground. The root is oblong, commonly an inch and an half long, and one inch and a quarter broad in the middle; but ſome of the roots have been as big as a man's fiſts. The *Indians* either boiled this root or roaſted it in hot aſhes. Some of the *Swedes* likewiſe eat them with much appetite, at the time when the *Indians* were ſo near the coaſt; but at preſent none of them make any uſe

of

of the roots. A man of ninety-one years of age, called *Nils Gustafson*, told me, that he had often eaten these roots when he was a boy, and that he liked them very well at that time. He added that the *Indians*, especially their women, travelled to the islands, dug out the roots, and brought them home; and whilst they had them, they desired no other food. They said that the hogs, which are amazingly greedy of them, have made them very scarce. The cattle are very fond of its leaves. I afterwards got some of these roots roasted, and in my opinion they tasted well, though they were rather dry: The taste was nearly the same with that of the potatoes. When the *Indians* come down to the coast and see the turneps of the *Europeans*, they likewise give them the name of *katnis*. Their katnis is an arrow-head or *Sagittaria*, and is only a variety of the *Swedish* arrow-head or *Sagittaria sagittifolia*, for the plant above the ground is entirely the same, but the root under ground is much greater in the *American* than in the *European*. Mr. *Osbeck* in his voyage to *China*, vol. i. p. 334, of the *English* edition, mentions, that the *Chinese* plant a *Sagittaria*, and eat its roots. This seems undoubtedly to be a variety of this *katnis*. Further in the north of this

part of *America*, I met with the other ſpecies of *Sagittaria* which we have in *Sweden*.

TAW-HO and *Taw-him* was the *Indian* name of another plant, the root of which they eat. Some of them likewiſe call it *Tuckah*; but moſt of the *Swedes* ſtill knew it by the name of *Taw-ho*. It grows in moiſt ground and ſwamps. Hogs are very greedy of the roots, and grow very fat by feeding on them. Therefore, they often viſit the places where theſe roots grow; and they are frequently ſeen rooting up the mud, and falling with their whole body into the water, ſo that only a little of the back part was out of the water. It is therefore very plain, that theſe roots muſt have been extirpated in places which are frequented by hogs. The roots often grow to the thickneſs of a man's thigh. When they are freſh, they have a pungent taſte, and are reckoned a poiſon in that freſh ſtate. Nor did the *Indians* ever venture to eat them raw, but prepared them in the following manner: They gathered a great heap of theſe roots, dug a great long hole, ſometimes two or three fathoms and upwards in length, into which they put the roots, and covered them with the earth that had been taken out of the hole; they made a great fire above it, which burnt till they thought proper to remove it; and then

they dug up the roots, and consumed them with great avidity. These roots, when prepared in this manner, I am told, taste like potatoes. The *Indians* never dry and preserve them; but always take them fresh out of the marshes, when they want them. This *Taw-ho* is the *Arum Virginicum*, or *Virginian* Wake-robin. It is remarkable, that the Arums, with the plants next akin to them, are eaten by men in different parts of the world, though their roots, when raw, have a fiery pungent taste, and are almost poisonous in that state. How can men have learnt, that plants so extremely opposite to our nature were eatable; and that their poison, which burns on the tongue, can be conquered by fire. Thus the root of the *Calla palustris*, which grows in the north of *Europe*, is sometimes used instead of bread on an exigency. The *North American Indians* consume this species of Arum. Those of *South America*, and of the *West Indies*, eat other species of Arums. The *Hottentots*, at the *Cape of Good Hope*, in *Africa*, prepare bread from a species of *Arum* or Wake-robin, which is as burning and poisonous as the other species of this plant. In the same manner, they employ the roots of some kinds of Arum as a food, in *Egypt* and *Asia*. Pro-

bably, that ſevere but ſometimes uſeful miſtreſs, neceſſity, has firſt taught men to find out a food, which the firſt taſte would have rejected as uſeleſs. This *Taw-ho* ſeems to be the ſame with what the *Indians* in *Carolina* call *Tuckahoo*; and of which ſee Vol. I. p. 287.

TAW-KEE is another plant, ſo called by the *Indians*, who eat it. Some of them call it *Taw-kim*, and others *Tackvim*. The *Swedes* call it always by the name of *Taw-kee*. The plant grows in marſhes, near moiſt and low grounds, and is very plentiful in *North America*. The cattle, hogs and ſtags, are very fond of the leaves in ſpring; for they are ſome of the earlieſt. The leaves are broad, like thoſe of the *Convallaria*, or Lilly of the Valley, green on the upper ſide, and covered with very minute hair, ſo that they looked like a fine velvet. The *Indians* pluck the ſeeds, and keep them for eating. They cannot be eaten freſh or raw, but muſt be dried. The *Indians* were forced to boil them repeatedly in water, before they were fit for uſe; and then they ate them like peaſe. When the *Swedes* gave them butter or milk, they boiled or broiled the ſeeds in it. Sometimes they employ theſe ſeeds inſtead of bread; and they taſte like peaſe. Some of the *Swedes* likewiſe

wiſe ate them; and the old men among them told me, they liked this food better than any of the other plants which the *Indians* formerly made uſe of. This *Taw-kee* was the *Orontium aquaticum.*

Bilberries were likewiſe a very common diſh among the *Indians.* They are called *Huckleberries* by the *Engliſh* here, and belong to ſeveral ſpecies of *Vaccinium*, which are all of them different from our *Swediſh* Bilberry-buſh, though their berries, in regard to colour, ſhape, and taſte, are ſo ſimilar to the *Swediſh* bilberry, that they are diſtinguiſhed from each other with difficulty. The *American* ones grow on ſhrubs, which are from two to four feet high; and there are ſome ſpecies which are above ſeven feet in height. The *Indians* formerly plucked them in abundance every year, dried them either in the ſun-ſhine or by the fire-ſide, and afterwards prepared them for eating, in different manners. Theſe huckleberries are ſtill a dainty diſh among the *Indians.* On my travels through the country of the *Iroqueſe*, they offered me, whenever they deſigned to treat me well, freſh maize-bread, baked in an oblong ſhape, mixed with dried *Huckleberries*, which lay as cloſe in it as the raiſins in a plumb-pudding. I ſhall

write more at large about it in the ſequel. The *Europeans* are likewiſe uſed to collect a quantity of theſe berries, to dry them in ovens, to bake them in tarts, and to employ them in ſeveral other ways. Some preſerve them with treacle. They are likewiſe eaten raw, either quite alone or with freſh milk.

I SHALL, on the 27th of *March*, find occaſion to mention another diſh, which the *Indians* ate formerly, and ſtill eat, on formal ceremonies.

March the 18th. ALMOST during the whole of this ſpring, the weather and the winds were always calm in the morning at ſun-riſing. At eight o'clock the wind began to blow pretty hard, and continued ſo all day, till ſun-ſetting; when it ceaſed, and all the night was calm. This was the regular courſe of the weather; but ſometimes the winds raged, without intermiſſion, for two or three days together. At noon it was commonly moſt violent. But in the ordinary way, the wind decreaſed and increaſed as follows: At ſix in the morning, a calm; at ſeven, a very gentle weſtern breeze, which grew ſtronger at eight; at eleven it was much ſtronger; but at four in the afternoon, it is no ſtronger than it was at

at eight o'clock in the morning; and thus it goes on decreasing till it is quite a calm, just before sun-set. The winds this spring blew generally west, as appears from the observations at the end of this volume.

I was told, that it was a very certain prognostic of bad weather, that when you see clouds in the horizon in the south-west, about sun-setting, and when those clouds sink below the horizon, in an hour's time, it will rain the next day, though all the forenoon be fair and clear. But if some clouds be seen in the south-west, in the horizon, at sun-set, and they rise some time after, you may expect fair weather the next day.

March the 20th. An old *Swede* prognosticated a change in the weather, because it was calm to-day; for when there has been wind for some days together, and a calm follows, they say, rain or snow, or some other change in the weather, will happen. I was likewise told, that some people here were of that false opinion, that the weather commonly alters on *Friday*; so that, in case it had rained or blown hard all the week, and a change was to happen, it would commonly fall on *Friday*. How far the former prognostic has been true, appears from my own observations of the weather, to which I refer.

March the 21ſt. The red maple *(Acer rubrum)* and the *American* elm *(Ulmus Americana)* began to flower at preſent; and ſome of the latter kind were already in full bloſſom.

March the 24th. I WALKED pretty far to-day, in order to ſee whether I could find any plants in flower. But the cloudy weather, and the great rains which had lately fallen, had allowed little or nothing to grow up. The leaves now began to grow pretty green. The plants which I have juſt before mentioned, were now in full bloſſom.

THE noble Liverwort, or *Anemone hepatica*, was now every where in flower. It was abundant; and the *Swedes* called it *Blablomſter*, or Blue-flower. They did not know any uſe of it.

NEAR all the corn-fields on which I walked to-day, I did not ſee a ſingle ditch, though many of them wanted it. But the people generally followed the *Engliſh* way of making no ditches along the fields, without conſidering whether the corn-fields wanted them or not. The conſequence was, that the late rain had in many places waſhed away great pieces of the grounds, ſown with wheat and rye. There were no ridges left between the fields, except a very narrow one near the fence, which was entirely over-grown with

with the Sumach, or *Rhus glabra*, and with black-berry bushes, so that there the cattle could find very little or no food. The corn fields were *broad-cast*, or divided into pieces, which were near seventeen feet broad, and separated from each other only by means of furrows. These pieces were uniform, and not elevated in the middle.

MELOE *majalis*, a species of oil-beetle, crept about on the hills.

PAPILIO *Antiopa*, or willow butterfly, flew in the woods to-day, and was the first butterfly which I saw this year.

PAPILIO *Euphrosyne*, or the *April* butterfly, was one of the scarce species. The other *American* insect, which I described this day and the following days, I shall mention on some other occasion. In the sequel I shall only mention those which were remarkable for some peculiar qualities.

THE hay-stacks were commonly made here after the *Swedish* manner, that is, in the shape of a thick and short cone, without any cover over it. When the people wanted any hay, they cut some of it loose, by a peculiar sort of a knife. However, many people, especially in the environs of *Philadelphia*, had hay-stacks with roofs which could be moved up and down.

Near

Near the ſurface of the ground were ſome poles laid, on which the hay was put, that the air may paſs freely through it. I have mentioned before, that the cattle have no ſtables in winter or ſummer, but muſt go in the open air, during the whole year. However, in *Philadelphia*, and in a few other places, I have ſeen that thoſe people who made uſe of the latter kind of hay-ſtacks, viz. that with moveable roofs, commonly had built them ſo, that the hay was put a fathom or two above the ground, on a floor of boards, under which the cattle could ſtand in winter, when the weather was very bad. Under this floor of boards were partitions of boards on all the ſides, which however ſtood far enough from each other, to afford the air a free paſſage.

March the 27th. In the morning I went in order to ſpeak with the old *Swede*, *Nils Guſtafſon*, who was ninety-one years of age. I intended to get an account of the former ſtate of *New Sweden*. The country which I now paſſed through was the ſame with that which I had found in thoſe parts of *North America* I had hitherto ſeen. It was diverſified with a variety of little hills and vallies: the former conſiſted of a very pale brick-coloured earth, compoſed, for the greateſt part, of a fine ſand,

ſand, mixed with ſome mould. I ſaw no mountains, and no ſtones, except ſome little ſtones, not above the ſize of a pigeon's or hen's egg, lying on the hills, and commonly conſiſting of white quartz, which was generally ſmooth and poliſhed on the outſide. At the bottom, along the vallies, ran ſometimes rivulets of cryſtalline water, the bottom of which was covered with ſuch white pebbles as I have juſt deſcribed. Now and then I met with a ſwamp in the vallies. Sometimes there appeared, though at conſiderable diſtances from each other, ſome farms, frequently ſurrounded on all ſides by corn-fields. Almoſt on every corn-field there yet remained the ſtumps of trees, which had been cut down; a proof that this country has not been long cultivated, being overgrown with trees forty or fifty years ago. The farms did not ly together in villages, or ſo that ſeveral of them were near each other, in one place; but they were all ſeparated from one another. Each countryman lived by himſelf, had his own ground about his houſe, ſeparated from the property of his neighbour. The greateſt part of the land, between theſe farms ſo diſtant from each other, was over-grown with woods, conſiſting of tall trees. However, there was a fine ſpace between

between the trees, ſo that one could ride on horſeback without inconvenience in the woods, and even with a cart in moſt places; and the ground was very plain and uniform at the ſame time. Here and there appeared ſome fallen trees, thrown down by the wind; ſome were torn up by the roots; others broken quite acroſs the ſtem. In ſome parts of the country the trees were thick and tall, but in others I found large tracts covered with young trees, only twenty, thirty, or forty years old: theſe tracts, I am told, the *Indians* formerly had their little plantations in. I did not yet ſee any marks of the leaves coming out, and I did not meet with a flower in the woods: for the cold winds, which had blown for ſeveral days together ſucceſſively, had hindered this. The woods conſiſted chiefly of ſeveral ſpecies of oak, and of hiccory. The ſwamps were filled with red maple, which was all now in flower, and made theſe places look quite red at a diſtance.

The old *Swede*, whom I came to viſit, ſeemed to be ſtill pretty hearty and freſh, and could walk by the help of a ſtick; but he complained of having felt in theſe latter years, ſome pains in his back, and limbs, and that he could keep his feet warm in winter only by ſitting near the fire.

He

He ſaid he could very well remember the ſtate of this country, at the time when the *Dutch* poſſeſſed it, and in what circumſtances it was in before the arrival of the *Engliſh*. He added, that he had brought a great deal of timber to *Philadelphia*, at the time that it was built. He ſtill remembered to have ſeen a great foreſt on the ſpot where *Philadelphia* now ſtands. The father of this old man had been one of the *Swedes* who were ſent over from *Sweden*, in order to cultivate and inhabit this country. He returned me the following anſwers to the queſtions I aſked him.

QUERE, Whence did the *Swedes*, who firſt came hither, get their cattle? The old man anſwered, that when he was a boy, his father and other people had told him, that the *Swedes* brought their horſes, cows, and oxen, ſheep, hogs, geeſe, and ducks, over with them. There were but few of a kind at firſt, but they multiplied greatly here afterwards. He ſaid, that *Maryland*, *New York*, *New England*, and *Virginia*, had been ſooner inhabited by *Europeans* than this part of the country; but he did not know whether the *Swedes* ever got cattle of any kind, from any of theſe provinces, except from *New York*. Whilſt he was yet very young, the *Swedes*, as well

as

as he could remember, had already a ſufficient ſtock of all theſe animals. The hogs had propagated ſo much at that time, there being ſo great a plenty of food for them, that they ran about wild in the woods, and that the people were obliged to ſhoot them, when they intended to make uſe of them. The old man likewiſe recollected, that horſes ran wild in the woods, in ſome places; but he could not tell whether any other kind of cattle turned wild. He thought that the cattle grow as big at preſent as they did when he was a boy, ſuppoſing they get as much food as they want. For in his younger years, food for all kinds of cattle was ſo plentiful, and even ſo ſuperfluous, that the cattle were extremely well fed by it. A cow at that time gave more milk, than three or four do at preſent; but ſhe got more and better food at that time, than three or four get now; and, as the old man ſaid, the ſcanty allowance of graſs, which the cattle get in ſummer, is really very pitiful. The cauſes of this ſcarcity of graſs have already been mentioned.

QUERE, Whence did the *Engliſh* in *Penſylvania* and *New Jerſey* get their cattle? They bought them chiefly from the *Swedes* and *Dutch*, who lived here; and a ſmall

a small number were brought over from *Old England*. The form of the cattle, and the unanimous accounts of the *English* here, confirmed what the old man had said.

QUERE, Whence did the *Swedes* here settled get their several sorts of corn, and likewise their fruit-trees and kitchen-herbs? The old man told me that he had frequently heard, when he was young, that the *Swedes* had brought all kinds of corn, and fruits, and herbs, or seeds of them, with them. For, as far as he could recollect, the *Swedes* here were plentifully provided with wheat, rye, barley, and oats. The *Swedes*, at that time, brewed all their beer of malt made of barley, and likewise made good strong beer. They had already got distilling vessels, and made good brandy. Every one among them had not a distilling vessel, but when they intended to distil, they lent their apparatus to one another. At first they were forced to buy maize of the *Indians*, both for sowing and eating. But after continuing for some years in this country, they extended their maize-plantations so much that the *Indians* were obliged some time after to buy maize of the *Swedes*. The old man likewise assured me, that the

Indians

Indians formerly, and about the time of the firſt ſettling of the *Swedes*, were more induſtrious and laborious in every branch of buſineſs, than they are now. Whilſt he was young, the *Swedes* had a great quantity of very good *white cabbage*. *Winter cabbage*, or *Cale*, which was left on the ground during winter, was likewiſe abundant. They were likewiſe well provided with turnips. In winter they kept them in holes under ground. But the old man did not like that method; for when they had lain too long in theſe holes, in winter, they became ſpungy. He preferred that method of keeping them which is now commonly adopted, and which conſiſts in the following particulars. After the turnips have been taken out of the ground in autumn, and expoſed to the air for a while, they are put in a heap upon the field, covered with ſtraw at the top, and on the ſides, and with earth over the ſtraw. By this means they ſtand the winter very well here, and do not become ſpungy. The *Indians* were very fond of turneps, and called them ſometimes *Hopniſs*, ſometimes *Katniſs*. The *Swedes* likewiſe cultivated carrots, in the old man's younger years. Among the fruit-trees were *Apple-trees*. They

They were not numerous, and only ſome of the *Swedes* had little orchards of them, whilſt others had not a ſingle tree. None of the *Swedes* made cyder, for it is come into uſe but lately. The *Swedes* brewed ſtrong beer and ſmall beer, and it was their common liquor. But at preſent there are very few who brew beer, for they commonly prepare cyder. *Cherry-trees* were abundant when *Nils Guſtafson* was yet a boy. Peach-trees were at that time more numerous than at preſent, and the *Swedes* brewed beer of the fruit. The old man could not tell from whence the *Swedes* firſt of all got the peach-trees.

DURING the younger years of this old man, the *Indians* were every where ſpread in the country; they lived among the *Swedes*, and were ſcattered every where. The old man mentioned *Swedes* who had been killed by the *Indians*; and he mentioned two of his countrymen who had been ſcalped by them. They ſtole children from the *Swedes*, and carried them off, and they were never heard of again. Once they came and killed ſome *Swedes*, and took the upper part of their ſculls with them; on that occaſion they ſcalped a little girl, and would have killed her, if they had not perceived a boat full of *Swedes*, making towards them,

which obliged them to fly; the girl was afterwards healed, but never got any hair on her head again; she was married, had many children, and lived to a considerable age. At another time, the *Indians* attempted to kill the mother of this old man, but she vigorously resisted them, and in the mean while a number of *Swedes* came up, who frightened the *Indians*, and made them run away. Nobody could ever find out to what nation of *Indians* these owe their origin; for in general they lived very peaceably with the *Swedes*.

The *Indians* had their little plantations of maize in many places; before the *Swedes* came into this country, the *Indians* had no other than their hatchets made of stone; in order to make maize plantations they cut out the trees and prepared the ground in the manner I have before mentioned *. They planted but little maize, for they lived chiefly upon hunting; and throughout the greatest part of summer, their *Hopnis* or the roots of the *Glycine Apios*, their *Katnis*, or the roots of the *Sagittaria Sagittifolia*, their *Taw-ho* or the roots of the *Arum Virginicum*, their *Tawkee* or *Orontium aquaticum*, and whortleberries, were their chief food. They had no

* In page 39 of this Volume.

no horses or other cattle which could be subservient to them in their agriculture, and therefore did all the work with their own hands. After they had reaped the maize, they kept it in holes under ground, during winter; they dug these holes seldom deeper than a fathom, and often not so deep; at the bottom and on the sides they put broad pieces of bark. The *Andropogon bicorne*, a grass which grows in great plenty here, and which the *English* call *Indian Grass*, and the *Swedes Wilskt Grass**, supplies the want of bark; the ears of maize are then thrown into the hole and covered to a considerable thickness with the same grass, and the whole is again covered by a sufficient quantity of earth: the maize kept extremely well in those holes, and each *Indian* had several such subterraneous stores, where his corn lay safe, though he travelled far from it. After the *Swedes* had settled here and planted apple-trees and peach-trees, the *Indians*, and especially their women, sometimes stole the fruit in great quantity; but when the *Swedes* caught them, they gave them a severe drubbing, took the fruit from them, and often their clothes too. In the same manner it

* Grass of the savages.

happened ſometimes that as the *Swedes* had a great encreaſe of hogs, and they ran about in the woods, the *Indians* killed ſome of them privately and feaſted upon them: but there were likewiſe ſome *Indians* who bought hogs of the *Swedes* and fed them; they taught them to run after them like dogs, and whenever they removed from one place to another, their hogs always followed them. Some of thoſe *Indians* got ſuch numbers of theſe animals, that they afterwards gave them to the *Swedes* for a mere trifle. When the *Swedes* arrived in *America*, the *Indians* had no domeſtic animals, except a ſpecies of little dogs. The *Indians* were extremely fond of milk, and ate it with pleaſure when the *Swedes* gave it them. They likewiſe prepared a kind of liquor like milk in the following manner: they gathered a great number of hiccory nuts and walnuts from the black walnut-trees, dried and cruſhed them; then they took out the kernels, pounded them ſo fine as flour, and mixed this flour with water, which took a milky hue from them, and was as ſweet as milk. They had tobacco-pipes of clay, manufactured by themſelves, at the time that the *Swedes* arrived here; they did not always ſmoke true tobacco, but made uſe of another plant inſtead of it, which was

was unknown to the old *Swedes*, but of which he aſſured me that it was not the common mullein, or *Verbaſcum Thapſus*, which is generally called *Indian Tobacco* here*.

As to their religion, the old man thought it very trifling, and even believed that they had none at all; when they heard loud claps of thunder, they ſaid that the evil ſpirit was angry; ſome of them ſaid that they believed in a God, who lives in heaven. The old *Swede* once walked with an *Indian*, and they met with a red-ſpotted ſnake on the road: the old man therefore went to ſeek a ſtick in order to kill the ſnake; but the *Indian* begged he would not touch it, becauſe he adored it: perhaps the *Swede* would not have killed it, but on hearing that it was the *Indian*'s deity, he took a ſtick and killed it, in the preſence of the *Indian*, ſaying: Becauſe thou believeſt in it, I think myſelf obliged to kill it. Sometimes the *Indians* came into the *Swediſh* churches, looked at them, heard them, and went away again, after a while. One day as this old *Swede* was at church, and did not ſing, becauſe he had no Pſalm-book by him, one of the *Indians*, who was

* In the *Swediſh* language *Wilſkt Toback*.

well acquainted with him, tapped him on the ſhoulder, and ſaid: *Why doſt thou not ſing with the others, Tantanta! Tantanta! Tantanta?* On another occaſion, as a ſermon was preached in the *Swediſh* church, at *Raccoon*, an *Indian* came in, looked about him; and, after hearkening a while to the preacher, he ſaid: *Here is a great deal of prattle and nonſenſe, but neither brandy nor cyder*; and went out again. For it is to be obſerved, that when an *Indian* makes a ſpeech to his companions, in order to encourage them to war, or to any thing elſe, they all drink immoderately on thoſe occaſions.

At the time when the *Swedes* arrived, they bought land at a very inconſiderable price. For a piece of baize, or a pot full of brandy, or the like, they could get a piece of ground, which at preſent would be worth more than four hundred pounds, *Penſylvania* currency. When they ſold a piece of land, they commonly ſigned an agreement; and though they could neither read nor write, yet they ſcribbled their marks, or ſignatures, at the bottom of it. The father of old *Nils Guſtafſon* bought a piece of ground from the *Indians* in *New Jerſey*. As ſoon as the agreement was drawn up, and the *Indians* ſhould ſign it, one of them,

them, whose name signified a beaver, drew a beaver, another of them drew a bow and arrow, and a third a mountain, instead of their names. Their canoes they made of thick trees; which they hollowed out by fire, and made them smooth again with their hatchets, as has been before mentioned.

The following account the old man gave me, in answer to my questions with regard to the weather and its changes: It was his opinion, that the weather had always been pretty uniform ever since his childhood; that there happen as great storms at present as formerly; that the summers now are sometimes hotter, sometimes colder, than they were at that time; that the winters were often as cold and as long as formerly; and that still there often falls as great a quantity of snow as in former times. However, he thought that no cold winter came up to that which happened in the year 1697; and which is often mentioned in the almanacks of this country; and I have mentioned it in the preceding volume. For in that winter the river *Delaware* was so strongly covered with ice, that the old man brought many waggons full of hay over it, near *Christina*; and that it was passable in sledges even lower. No cattle, as far as he

could recollect, were ſtarved to death in cold winters; except, in later years, ſuch cattle as were lean, and had no ſtables to retire into. It commonly does not rain, neither more nor leſs, in ſummer than it did formerly; excepting that, during the laſt years, the ſummers have been more dry. Nor could the old *Swede* find a diminution of water in brooks, rivers, and ſwamps. He allowed, as a very common and certain fact, that wherever you dig wells, you meet with oyſter-ſhells in the ground.

The old *Guſtafſon* was of opinion, that intermitting fevers were as frequent and violent formerly as they are now; but that they ſeemed more uncommon, becauſe there were fewer people at that time here. When he got this fever, he was not yet full grown. He got it in ſummer, and had it till the enſuing ſpring, which is almoſt a year; but it did not hinder him from doing his work, either within or out of doors. *Pleuriſy* likewiſe attacked one or two of the *Swedes* formerly; but it was not near ſo common as it is now. The people in general were very healthy at that time.

Some years ago, the old *Swede*'s eyes were ſo much weakened that he was forced to make uſe of a pair of ſpectacles. He then got a fever; which was ſo violent, that

that it was feared he would not recover. However, he became quite well again, and at the same time got new strength in his eyes; so that he has been able to read without spectacles since that time.

The houses which the *Swedes* built when they first settled here, were very bad. The whole house consisted of one little room, the door of which was so low, that one was obliged to stoop in order to get in. As they had brought no glass with them, they were obliged to be content with little holes, before which a moveable board was fastened. They found no moss, or at least none which could have been serviceable in stopping up holes or cracks in the walls. They were therefore forced to close them, both without and within, with clay. The chimnies were made in a corner, either of grey sand, a stone, or (in places where no stone was to be got) of mere clay, which they laid very thick in one corner of the house. The ovens for baking were likewise in the rooms. Formerly the *Swedes* had proper stables for the cattle; but after the *English* came hither, and made no peculiar buildings for their cattle, the *Swedes* likewise left off making stables.

Before the *English* came to settle here, the *Swedes* could not get as many cloaths as they

they wanted; and were therefore obliged to make ſhift as well as they could. The men wore waiſtcoats and breeches of ſkins. Hats were not in faſhion; and they made little caps, provided with flaps before. They had worſted ſtockings. Their ſhoes were of their own making. Some of them had learnt to prepare leather, and to make common ſhoes, with heels; but thoſe who were not ſhoemakers by profeſſion, took the length of their feet, and ſewed the leather together accordingly; taking a piece for the ſole, one for the hind-quarters, and one more for the upper-leather. At that time, they likewiſe ſowed flax here, and wove linen cloth. Hemp was not to be got; and they made uſe of flaxen ropes and fiſhing tackle. The women were dreſſed in jackets and petticoats of ſkins. Their beds, excepting the ſheets, were ſkins of ſeveral animals; ſuch as bears, wolves, &c.

Tea, coffee, and chocolate, which are at preſent univerſally in uſe here, were then* wholly unknown. Bread and butter, and other ſubſtantial food, was what they breakfaſted upon; and the above-mentioned ſuperfluities have only been lately introduced, according to the account of the old *Swede*.

Sugar

* Before the *Engliſh* ſettled here.

Sugar and treacle they had in abundance, as far as he could remember; and rum formerly bore a more moderate price.

FROM the accounts of this old *Swede* I concluded, that before the *Engliſh* ſettled here, they followed wholly the cuſtoms of *Old Sweden*; but after the *Engliſh* had been in the country for ſome time, the *Swedes* began gradually to follow their cuſtoms. When this *Swede* was but a boy, there were two *Swediſh* ſmiths here, who made hatchets, knives, and ſcythes, exactly like the *Swediſh* ones, and made them ſharper than they can be got now. The hatchets now in uſe are in the *Engliſh* way, with a broad edge; and their handles are very narrow. Almoſt all the *Swedes* made uſe of baths; and they commonly bathed every *Saturday*. They celebrated *Chriſtmas* with ſeveral ſorts of games, and with ſeveral peculiar diſhes, as is uſual in *Sweden*; all which is now, for the greateſt part, left off. In the younger years of this *Swede*, they made a peculiar kind of carts here. They ſawed thick pieces of liquid-amber trees, and made uſe of two of them for the foremoſt wheels, and of two more for the hindmoſt. With thoſe carts they brought home their wood. Their ſledges were at that time

time made almoſt in the ſame manner as they are now, or about as broad again as the true *Swediſh* ones. Timber and great beams of wood were carried upon a dray. They baked great loaves, ſuch as they do now. They had never any biſcuit, though the clergymen, who came from *Sweden*, commonly got ſome baked.

THE *Engliſh* on their arrival here bought large tracts of land of the *Swedes*, at a very inconſiderable price. The father of the old *Swede* ſold an eſtate to the *Engliſh*, which at this time would be reckoned worth three hundred pounds, for which he got a cow, a ſow, and a hundred gourds.

WITH regard to the decreaſe of birds, the number of them and fiſh, he was wholly of that opinion which I have already mentioned *. This was the account which the old man gave me of the former ſtate of the *Swedes* in this country. I ſhall ſpeak more particularly of it in the ſequel.

HURRICANES are ſometimes very violent here, and often tear up great trees. They ſometimes proceed as it were in peculiar tracts, or lines. In ſome places, eſpecially in the hurricane's tract, all the trees

* See vol. I. page 289.

trees are struck down, and it looks as if the woods were cut down designedly; but close to the tract the trees receive no hurt. Such is the place which was shewn to me to-day. It is dangerous to go into the woods where the hurricanes blow; for the trees fall before one has time to guard himself, or make the least provision for his security.

The *Pensylvanian Asp* was now in full blossom. But neither this tree, nor those near a-kin to it, shewed their leaves.

An old countryman asserted that he commonly sowed a bushel of rye, on an acre of ground, and got twenty bushels in return; but from a bushel of barley he got thirty bushels. However in that case the ground must be well prepared. Wheat returns about as much as rye. The soil was a clay mixed with sand and mould.

In the evening I returned*.

March the 28th. I found a black beetle † *(Scarabæus)* with a pentagonal oval

* From *Nils Gustafson*, the old *Swede*.

† The beetle here described, seems to be the *Scarabæus Carolinus*, Linn. Syst. Nat. p. 545, and of *Drury* Illustrations of Nat. Hist. tab. 35. f. 2. It is common in *New York, New Jersey, Pensylvania, Maryland*, and *Carolina*. F.

oval *Clypeus* or ſhield, on the head a ſhort blunt horn, and a gibbous, or hump-backed *Thorax*, or Corſelet. This beetle is one of the bigger ſort here. I found here and there holes on the hills, which were ſo wide that I could put my finger into them. On digging them up I always found theſe beetles lying at the bottom, about five inches under ground. Sometimes there were ſhort whitiſh worms, about as thick as one's finger, which lay with the beetles; and perhaps they were related to them. There were likewiſe other inſects in ſuch holes, as, a black cricket *(Gryllus campeſtris)?* ſpiders, earth-beetles *(Carabi)*, and others. This beetle had a ſcent exactly like the *Trifolium melilotus cærulea*, or the blue melilot. It was entirely covered with oblong pale ticks *(Acari)*. Its feet were as ſtrong as thoſe of the common *Dung-chaffer (Scarabæus ſtercorarius)*.

April the 4th. A *Cicindela*, or ſhining beetle, with a gold-green head, thorax, and feet, and a blue green abdomen or belly, flew every where about the fields, and was hunting other inſects. It is very common in *North America*, and ſeems to be a mere variety of the *Cicindela campeſtris*.

Cimex *lacuſtris*, a kind of *Water-bugs*,

hopped in numbers on the surface of waters which had a slow course.

Dytiscus *piceus*, or, the great *Water-beetle*, swam sometimes in the water.

About sixty years ago, the greatest part of this country was covered with tall and thick trees, and the swamps were full of water. But it has undergone so great a change, as few other places have undergone, in so short a time. At present the forests are cut down in most places, the swamps drained by ditches, the country cultivated, and changed into corn-fields, meadows, and pastures. Therefore, it seems very reasonable to suppose, that so sudden a change has likewise had some effect upon the weather. I was therefore desirous of hearing from the old *Swedes*, who have lived the longest in this country, and have been inhabitants of this place during the whole time of the change mentioned, whether the present state of the weather was in some particulars remarkably different from that which they felt in their younger years? The following is an account which they all unanimously gave me in answer to this question.

The winter came sooner formerly than it does now. Mr *Isaac Norris*, a wealthy merchant, who has a considerable share in the

the government of *Penſylvania*, confirmed this by a particular account. His father, one of the firſt *Engliſh* merchants in this country, obſerved, that in his younger years, the river *Delaware* was commonly covered with ice, about the middle of *November*, old ſtyle, ſo that the merchants were obliged to bring down their ſhips in great haſte before that time, for fear of their being obliged to ly all winter. On the contrary, this river ſeldom freezes over at preſent, before the middle of *December*, old ſtile.

It ſnowed much more in winter, formerly, than it does now; but the weather in general was likewiſe more conſtant and uniform; and when the cold ſet in, it continued to the end of *February*, or till *March*, old ſtyle, when it commonly began to grow warm. At preſent, it is warm, even the very next day after a ſevere cold; and ſometimes the weather changes ſeveral times a day.

Most of the old people here were of opinion, that ſpring came much later at preſent, than formerly, and that it was now much colder in the latter end of *February*, and the whole month of *May*, than when they were young. Formerly the

the fields were as green, and the air as warm, towards the end of *February*, as it is now in *March*, or in the beginning of *April*, old ſtile. The *Swedes* at that time made uſe of this phraſe: *Paſk bitida, Paſk ſent, altid Gras*, that is, we have always graſs at *Eaſter*, whether it be ſoon or late in the year. But perhaps we can account as follows, for the opinion which the people here have, that vegetation appeared formerly more forward than it does now. Formerly the cattle were not ſo numerous as now; however, the woods were full of graſs and herbs, which, according to the teſtimony of all the old people here, grew to the height of a man. At preſent a great part of the annual graſſes and plants have been entirely extirpated by the continual grazing of numbers of cattle. Theſe annual graſſes were probably green very early in ſpring, and (being extirpated) might lead the people to believe, that every thing came on ſooner formerly, than it does at preſent.

It uſed to rain more abundantly than it does now; during the harveſt eſpecially, the rains fell in ſuch plenty, that it was very difficult to bring home the hay and corn. Some of the laſt years had been extremely dry. However, a few people were

of opinion that it rained as plentifully at preſent, as formerly.

ALL the people agreed, that the weather was not by far ſo inconſtant, when they were young, as it is now. For at preſent it happens at all times of the year, that when a day has been warm, the next is very cold, and *vice verſa*. It frequently happens that the weather alters ſeveral times in one day; ſo that when it has been a pretty warm morning, the wind blows from N. W. about ten o'clock, and brings a cold air with it; yet a little after noon it may be warm again. My meteorological obſervations ſufficiently confirm the reality of theſe ſudden changes of weather, which are ſaid to cauſe in a great meaſure the people to be more unhealthy at preſent, than they were formerly.

I likewiſe found every body agree in aſſerting, that the winter, betwixt the autumn of the year 1697, and the ſpring of the year 1698, was the coldeſt and the ſevereſt which they had ever felt.

April the 6th. SANGUINARIA *Canadenſis*, which is here called *Blood-root*, becauſe the root is great and red, and, when cut, looks like the root of red beet, and the *Epigæa repens*, which ſome call the *creeping ground Laurel*, were both beginning to

flower. The former grew in a rich mould, the other in a poorer soil.

The *Laurus æstivalis*, which some people call *Spice-wood*, likewise began to blossom about this time; its leaves were not yet broke out; it liked a moist soil in the woods.

April the 9th. Apocynum *Cannabinum* was by the *Swedes* called *Hemp of the Indians*;* and grew plentifully in old corn-grounds, in woods, on hills, and in high glades. The *Swedes* have given it the name of *Indian hemp*, because the *Indians* formerly, and even now, apply it to the same purposes as the *Europeans* do hemp; for the stalk may be divided into filaments, and is easily prepared. When the *Indians* were yet settled among the *Swedes*, in *Pensylvania* and *New Jersey*, they made ropes of this *Apocynum*, which the *Swedes* bought, and employed them as bridles, and for nets. These ropes were stronger, and kept longer in water, than such as were made of common hemp. The *Swedes* commonly got fourteen yards of these ropes for one piece of bread. Many of the *Europeans* still buy such ropes, because they last so well. The *Indians* likewise make several other stuffs of their hemp. On my journey through

* *Wilst* Hampa.

the country of the *Iroqueſe*, I ſaw the women employed in manufacturing this hemp. They made uſe neither of ſpinning-wheels nor diſtaffs, but rolled the filaments upon their bare thighs, and made thread and ſtrings of them, which they dyed red, yellow, black, &c. and afterwards worked them into ſtuffs, with a great deal of ingenuity. The plant is perennial, which renders the annual planting of it altogether unneceſſary. Out of the root and ſtalk of this plant, when it is freſh, comes a white milky juice, which is ſomewhat poiſonous. Sometimes the fiſhing tackle of the *Indians* conſiſts entirely of this hemp. The *Europeans* make no uſe of it, that I know of.

FLAX and *Cat-tail*, were names given to a plant which grows in bays, rivers, and in deep whirlpools, and which is known to botaniſts by the name of *Typha latifolia*. Its leaves are here twiſted together, and formed into great oblong rings, which are put upon the horſe's neck, between the mane and the collar, in order to prevent the horſe's neck from being hurt by the collar. The bottoms of chairs were frequently made of theſe leaves, twiſted together. Formerly the *Swedes* employed the wool or cotton which ſurrounds its ſeeds, and put it into their beds, inſtead of feathers;

thers; but as it coalesces into lumps after the beds have been used for some time, they have left off making use of them. I omit the use of this plant in physic, it being the peculiar province of the physicians.

A SPECIES of *Leek**, very like that which appears only in woods on hills in *Sweden*, grows at present on almost all corn-fields mixed with sand. The *English* here called it *Garlick*. On some fields it grew in great abundance. When the cattle grazed on such fields, and ate the garlick, their milk, and the butter which was made of it, tasted so strongly of it, that they were scarce eatable. Sometimes they sold butter in the *Philadelphia* markets, which tasted so strongly of garlick that it was entirely useless. On this account, they do not suffer milking cows to graze on fields where garlick abounds: this they reserve for other species of cattle. When the cattle eat much of this garlick in summer, their flesh has likewise such a strong flavour, that it is unfit for eating. This kind of garlick appears early in spring; and the horses always passed by it, without ever touching it.

* *Allium arvense; odore gravi, capitulis bulbosis rubentibus.* See *Gronov. Flora Virginica*, 37. This Leek seems to be Dr. *Linnæus*'s *Allium Canadense, scapo nudo tereti, foliis linearibus, capitulo bulbifero. Spec. plant.* 1. p. 431. F.

It would take too much room in my Journal, and render it too prolix, were I to mark down the time when every wild plant in this country was in bloſſom, when it got ripe ſeeds, what ſoil was peculiar to it, beſides other circumſtances. Some of my readers would be but little amuſed with ſuch a botanical digreſſion. I intend therefore to reſerve all this for another work, which will give a particular account of all the plants of *North America*; and I ſhall only mention ſuch trees and plants here, which deſerve to be made known for ſome peculiar quality.

April the 12th. This morning I went to *Philadelphia* and the places adjacent, in order to know whether there were more plants lately ſprung up, than at *Raccoon*, and in *New Jerſey* in general. The wet weather which had happened the preceding days, had made the roads very bad in low and clayey places.

The leaves which dropt laſt autumn had covered the ground, in depth three or four inches. As this ſeems to hinder the growth of the graſs, it was cuſtomary to burn it in *March* or at the end of that month, (according to the old ſtile) in order to give the graſs the liberty of growing up. I found ſeveral ſpots burnt in this manner to-day;

to-day; but if it be uſeful one way, it does a great deal of damage in another; all the young ſhoots of ſeveral trees were burnt with the dead leaves, which diminiſhes the woods conſiderably; and in ſuch places where the dead leaves had been burnt for ſeveral years together, the old trees only were left, which being cut down, there remains nothing but a great field, without any wood. At the ſame time all ſorts of trees and plants are conſumed by the fire, or at leaſt deprived of their power of budding; a great number of the plants, and moſt of the graſſes here, are annual; their ſeeds fall between the leaves, and by that means are burnt: This is another cauſe of univerſal complaint, that graſs is much ſcarcer at preſent in the woods than it was formerly; a great number of dry and hollow trees are burnt at the ſame time, though they could ſerve as fewel in the houſes, and by that means ſpare part of the foreſts. The upper mould likewiſe burns away in part by that means, not to mention ſeveral other inconveniences with which this burning of the dead leaves is attended. To this purpoſe the government of *Penſylvania* have lately publiſhed an edict, which prohibits this burning; nevertheleſs every one did as he pleaſed,

and this prohibition met with a general cenſure.

THERE were vaſt numbers of *Woodlice* in the woods about this time; they are a very diſagreeable inſect, for as ſoon as a perſon ſits down on an old ſtump of a tree, or on a tree which is cut down, or on the ground itſelf, a whole army of *Woodlice* creep upon his clothes, and inſenſibly come upon the naked body. I have given a full account of their bad qualities, and of other circumſtances relating to them, in the Memoirs of the *Swediſh* Royal Academy of Sciences. See the Volume for the year 1754, page 19.

I HAD a piece of petrified wood given me to-day, which was found deep in the ground at *Raccoon*. In this wood the fibres and inward rings appeared very plainly; it ſeemed to be a piece of hiccory; for it was as like it, in every reſpect, as if it had but juſt been cut from a hiccory-tree.

I LIKEWISE got ſome ſhells to-day which the *Engliſh* commonly call *Clams*, and whereof the *Indians* make their ornaments and money, which I ſhall take an opportunity of ſpeaking of in the ſequel. Theſe *Clams* were not freſh, but ſuch as are every where found in *New Jerſey*, on digging deep into the ground; the live ſhells of this

this kind are only found in salt water, and on the sea coasts. But these *Clams* were found at *Raccoon*, about eight or nine *English* miles from the river *Delaware*, and near a hundred from the nearest sea-shore.

At night I went to Mr *Bartram*'s seat.

April the 13th. I employed this day in several observations relative to Botany.

Two nests of wasps hung in a high maple-tree, over a brook. Their form was wholly the same with that of our wasp-nests, but they exceeded them in size. Each nest was ten inches in diameter; in each nest were three cakes, above one another, of which the lowermost was the biggest, and the two uppermost decreased in proportion: there were some eggs of wasps in them. The diameter of the lowest cake was about six inches, and one quarter, and that of the uppermost, three inches, and three quarters. The cells in which the eggs or the young ones were deposited were hexagonal, and the colour of the nest grey. I was told, that the wasps make this kind of nests out of the grey splints, which stick to old pales and walls. A dark brown bee, with black *antennæ*, and two black rings on the belly, and purple wings, flew about the trees, and might perhaps be an inhabitant of these nests.

ANOTHER

ANOTHER kind of wasps, which are larger than these, make their nests quite open. It consists merely of one cake, which has no covering, and is made of the boughs of trees. The cells are horizontal, and when the eggs or the young *larvæ* ly in them, they have lids or coverings, that the rain may not come into them. But whither the old wasps retreat during storms, is a mystery to me, except they creep into the crevices of rocks. That side of the cake which is uppermost is covered with some oily particles, so that the rain cannot penetrate. The cells are hexagonal, from five to seven lines deep, and two lines in diameter. Mr. *Bartram* observed, that these nests are built of two sorts of materials, viz. the splints which are found upon old pales, or fences, and which the wind separates from them; for the wasps have often been observed to sit on such old wood, and to gnaw away these splints; the sides and the lid or cover of the cells are made of an animal substance, or glutinous matter, thrown up by the wasps, or prepared in their mouths; for when this substance is thrown into the fire, it does not burn, but is only singed, like hair or horn. But the bottom of the nest being put into the fire, burns like linen

nen or half-rotten wood, and leaves a ſmell of burnt wood. The waſps, whoſe neſts I have now deſcribed, have three elevated black ſhining points on the forehead †, and a pentagonal black ſpot on the thorax. Towards the end of autumn theſe waſps creep into the cavities of mountains, where they ly torpid during winter. In ſpring, when the ſun begins to operate, they come out during day-time, but return towards night, when it grows cold. I ſaw them early in ſpring during ſunſhine, in and about ſome cavities in the mountains. I was told of another ſpecies of waſps, which make their neſts under ground.

GYRINUS *natator (Americanus)*, or the *Whirl-beetles*. Theſe were found dancing in great numbers on the ſurface of the waters.

April the 14th. THIS morning I went down to *Cheſter:* in ſeveral places on the road are ſaw-mills, but thoſe which I ſaw to-day had no more than one ſaw. I likewiſe

† Theſe three points are common to moſt inſects, and ought therefore not to be made characteriſtics of any particular ſpecies. They are called *Stemmata*, and are a kind of eyes which ſerve the inſects for looking at diſtant objects, as the compound eyes do for objects near at hand. F.

wiſe perceived that the woods and foreſts of theſe parts had been very roughly treated. It is cuſtomary here, when they erect ſaw-mills, wind-mills, or iron works, to lead the water a good way lower, in caſe the ground near a fall in the river is not convenient for building upon.

April the 16th. This morning I returned to *Raccoon*. This country has ſeveral kinds of ſwallows, viz. ſuch as live in barns, in chimneys, and under ground; there are likewiſe martens.

The *Barn Swallows*, or *Houſe Swallows* are thoſe with a furcated tail. They are *Linnæus's Hirundo ruſtica*. I found them in all the parts of *North America* which I travelled over. They correſpond very nearly to the *European Houſe Swallow* in regard to their colour, however there ſeems to be a ſmall difference in the note. I took no notice this year when they arrived: but the following year, 1750, I obſerved them for the firſt time on the 10th of *April* (new ſtyle); the next day in the morning, I ſaw great numbers of them ſitting on poſts and planks, and they were as wet as if they had been juſt come out of the ſea*. They build

* It has been a ſubject of conteſt among naturaliſts, to determine the winter-retreat of *Swallows*. Some think, they

build their nests in houses, and under the roofs on the outside; I likewise found their nests

they go to warmer climates when they disappear in the Northern countries: others say, they creep into hollow trees, and holes in clefts of rocks, and ly there all the winter in a torpid state: and others affirm, that they take their retreat into water, and revive again in spring. The two first opinions have been proved, and it seems have found credit; the last has been treated as ridiculous, and almost as an old woman's tale. Natural history, as all the other histories, depends not always upon the intrinsic degree of probability, but upon facts founded on the testimony of people of noted veracity.—*Swallows* are seldom seen sinking down into the water, *Swallows* have not such organs as frogs or lizards, which are torpid during winter, *ergo*, *Swallows* live not, and cannot live, under water.—This way of arguing, I believe, would carry us, in a great many cases, too far; for tho' it is not clear to every one, it may however be true: and lizards and frogs are animals of a class widely different from that of birds, and must therefore of course have a different structure; hence it is they are classed separately. The bear and the marmot are in winter in a torpid state, and have however not such organs as lizards and frogs; and no body doubts of their being, during some time, in the most rigid climates in a torpid state: for the *Alpine* Nations hunt the marmots frequently, by digging their holes up, and find them so torpid, that they cut their throats, without their reviving or giving the least sign of life during the operation; but when the torpid marmot is brought into a warm room and placed before the fire, it revives from its lethargy. The question must therefore be decided by facts; nor are they wanting here: Dr. *Wallerius*, the celebrated *Swedish* Chemist, wrote in 1748, *September* the 6th O. S. to the late Mr. *Klein*, Secretary of the City of *Dantzick*: "That he has seen more than once *Swallows* assembling on a reed, till they were all immersed and went to the bottom; this being preceded by a dirge of a quarter of an hour's length. He attests likewise, that he had seen a *Swallow* caught during winter out of a lake with a net, drawn,

nests built on mountains and rocks whose top projected beyond the bottom; they build

drawn, as is common in Northern countries, under the ice: this bird was brought into a warm room, revived, fluttered about, and soon after died."

Mr. *Klein* applied to many *Fermiers generaux* of the King of *Prussia*'s domains, who had great lakes in their districts, the fishery in them being a part of the revenue; in winter the fishery thereon is the most considerable under the ice, with nets spreading more than 200 or 300 fathoms, and they are often wound by screws and engines, on account of their weight. All the people questioned made affidavits upon oath before the magistrates. *First*, The mother of the Countess *Lehndorf* said, that she had seen a bundle of *Swallows* brought from the *Frisso-Haff* (a lake communicating with the *Baltic* at *Pillau*) which when brought into a moderately warm room, revived and fluttered about. *Secondly*, Count *Schlieben* gave an instrument on stamped paper, importing, that by fishing on the lake belonging to his estate of *Gerdauen* in winter, he saw several *Swallows* caught in the net, one of which he took up with his hand, brought it into a warm room, where it lay about an hour, when it began to stir, and half an hour after it flew about in the room. *Thirdly*, Fermier general (*Amtman*) *Witkowski* made affidavit, that in the year 1740, three *Swallows* were brought up with the net in the great pond at *Didlacken*; in the year 1741, he got two *Swallows* from another part of the pond, and took them home, (they all being caught in his presence); after an hour's space they revived all in a warm room, fluttered about, and died three hours after. *4thly*, *Amtman Bönke* says, that having had the estate *Kleskow* in farm, he had seen nine *Swallows* brought up in the net from under the ice, all which he took into a warm room, where he distinctly observed how they gradually revived; but a few hours after they all died. Another time his people got likewise some *Swallows* in a net, but he ordered them again to be thrown into the water. *5thly*, *Andrew Rutta*, a master fisherman, at *Oletsko*, made affidavit, 1747, that 22 years ago, two *Swallows*

build too under the corners of perpendicular rocks; and this shews where the *Swallows*

lows were taken up, by him, in a net, under the ice, and being brought into a warm room, they flew about. *6thly*, *Jacob Kosiulo*, a master fisherman, at *Stradauen*, made affidavit, that in 1736, he brought up in winter, in a net, from under the ice of the lake at *Raski*, a seemingly dead *Swallow*, which revived in half an hour's time, in a warm room, and he saw, a quarter of an hour after, the bird grow weaker, and soon after dying. *7thly*, I can reckon myself among the eye-witnesses of this *paradoxon* of natural history. In the year 1735, being a little boy, I saw several *Swallows* brought in winter by fishermen, from the river *Vistula*, to my father's house, where two of them were brought into a warm room, revived, and flew about. I saw them several times settling on the warm stove, (which the *Northern* nations have in their rooms) and I recollect well that the same forenoon they died, and I had them, when dead, in my hand.

In the year 1754, after the death of my uncle *Godefroy Wolf*, captain in the *Polish* regiment of foot guards; being myself one of his heirs, I administered for my co-heirs, several estates called the *Staroscy*, of *Dirschau*, in *Polish Prussia*, which my late uncle farmed under the king. In *January* the lake of *Lybschau*, belonging to these estates, being covered with ice, I ordered the fishermen to fish therein, and in my presence several *Swallows* were taken; which the fishermen threw in again; but one I took up myself, brought it home, which was five miles from thence, and it revived, but died about an hour after its reviving. These are facts, attested by people of the highest quality, by some in public offices, and by others, who, tho' of a low rank, however made these affidavits upon oath. It is impossible to suppose indiscriminately that they were prompted by views of interest, to assert as a fact, a thing which had no truth in it. It is therefore highly probable, or rather inconteſtably true, that *Swallows* retire in the *Northern* countries during winter, into the water, and stay there in a torpid state, till the return of warmth revives

them

Swallows made their nests, before the *Europeans* settled and built houses here; for it is well known that the huts of the *Indians* could not serve the purpose of the *Swallows*. A very creditable lady and her children told me the following story, assuring me that they were eye-witnesses to it: A couple of *Swallows* built their nest in the stable belonging to the lady; the female *Swallow*

them again in spring. The question therefore I believe ought for the future to be thus stated: The swallows in *Spain*, *Italy*, *France*, and perhaps some from *England*, remove to warmer climates; some *English* ones, and some in *Germany* and other mild countries, retire into clefts and holes in rocks, and remain there in a torpid state. In the colder northern countries the *Swallows* immerse in the sea, in lakes, and rivers, and remain in a torpid state, under ice, during winter. There are still some objections to this latter assertion, which we must remove. It is said, Why do not rapacious fish, and aquatic quadrupeds and birds, devour these *Swallows*? The answer is obvious. *Swallows* chuse only such places in the water for their winter retreat, as are near reeds and rushes; so that sinking down there between them and their roots, they are by them secured against the rapaciousness of their enemies. But others object, Why are not these birds caught in such waters as are continually harrassed by nets? I believe the same answer which has been made to the first objection, will serve for this likewise. Fishermen take care to keep off with their nets from places filled with reeds and rushes, for fear of entangling and tearing their nets; and thus the situation of *Swallows* under water, is the reason that they are seldom disturbed in their silent winter-retreats. What confirms this opinion still more is, that *Swallows* were never caught in *Prussia*, according to the above-mentioned affidavits, but

Swallow sat upon the nest, laid eggs in it, and was about to brood them; some days after, the people saw the female still sitting on the eggs: but the male flying about the nest and sometimes settling on a nail, was heard to utter a very plaintive note, which betrayed his uneasiness: on a nearer examination the female was found dead in the nest, and the people flung her away. The

but with those parts of the net which passed near to the reeds and rushes; and sometimes the *Swallows* were yet fastened with their feet to a reed, when they were drawn up by the net. As to the argument taken from their being so long under water without corruption, I believe, there is a real difference between animals suffocated in water, and animals being torpid therein. We have examples of things being a long time under water; to which we may add the intense cold of these northern regions, which preserves them. Who would have thought it, that snails and polypes may be dissected, and could reproduce the parts severed from their body, if it was not a fact? Natural history ought to be studied as a collection of facts; not as the history of our guesses or opinions. Nature varies in an infinite manner; and Providence has diversified the instinct of animals, and their œconomy, and adapted it to the various seasons and climates. This long digression I thought necessary and excusable; and the more so, as the ingenious great friends to the cause of Natural History, the late Mr. *Collinson*, and Mr. *Pennant*, have both asserted the impossibility and improbability of this immersion. I revere the memory and the ashes of the one, and think the friendship of the other an honour to me: but am assured, that both prefer truth to their private opinion; and can bear a modest opposition, when it is proposed with candour, with a view to promote truth, and with sentiments of respect and gratitude, as it is done by me, in the present case. F.

male then went to ſit upon the eggs, but after being about two hours on them, and thinking the buſineſs too troubleſome for him, he went out, and returned in the afternoon with another female, which ſat upon the eggs, and afterwards fed the young ones, till they were able to provide for themſelves. The people differed here in their opinions about the abode of *Swallows* in winter: moſt of the *Swedes* thought that they lay at the bottom of the ſea; ſome, with the *Engliſh* and the *French* in *Canada*, thought that they migrate to the ſouthward in autumn, and return in ſpring. I have likewiſe been credibly informed in *Albany*, that they have been found ſleeping in deep holes and clefts of rocks, during winter.

The *Chimney Swallows* are the ſecond ſpecies, and they derive their name from building their neſts in chimneys, which are not made uſe of in ſummer: ſometimes when the fire is not very great, they do not mind the ſmoke, and remain in the chimney. I did not ſee them this year till late in *May*, but in the enſuing year, 1750, they arrived on the 3d of *May*, for they appear much later than the other *Swallows*. It is remarkable that each feather in their tail ends in a ſtiff ſharp point, like the end of an awl; they apply the tail to the ſide of the

the wall in the chimneys, hold themselves with their feet, and the stiff tail serves to keep them up: they make a great thundering noise all the day long, by flying up and down in the chimneys; and as they build their nests in chimneys only, and it is well known that the *Indians* have not so much as a hearth made of masonry, much less a chimney, but make their fires on the ground in their huts, it is an obvious question, Where did these *Swallows* build their nests before the *Europeans* came, and made houses with chimneys? It is probable that they formerly made them in great hollow trees. This opinion was adopted by Mr. *Bartram*, and many others here. *Catesby* has described the *Chimney Swallow* and figured it *, and Dr. *Linnæus* calls it *Hirundo Pelasgia*.

The *Ground Swallows* or *Sand Martins*, (*Linnæus*'s *Hirundo riparia*) are to be met with every where in *America*; they make their nests in the ground on the steep shores of rivers and lakes.

The *Purple Martins* have likewise been described and drawn in their natural colours by *Catesby* †. Dr. *Linnæus* likewise calls them *Hirundo purpurea*. They are less common here than the former species; I

 have

* *Hirundo, caudâ aculeatâ, Americana.* Cates. Carol. vol. iii. t. 8.

† *Hirundo purpurea.* Nat. Hist. of Carol. vol. i. t. 51.

have ſeen in ſeveral places little houſes made of boards, and fixed on the outſide of the walls, on purpoſe that theſe *Martins* may make their neſts in them; for the people are very deſirous of having them near their houſes, becauſe they both drive away hawks and crows as ſoon as they ſee them, and alarm the poultry by their anxious note, of the approach of their enemies. The chickens are likewiſe uſed to run under ſhelter, as ſoon as they are warned by the *Martins*.

April the 17th. THE *Dirca paluſtris*, or *Mouſe-wood*, is a little ſhrub which grows on hills, towards ſwamps and marſhes, and was now in full bloſſom. The *Engliſh* in *Albany* call it *Leather-wood*, becauſe its bark is as tough as leather. The *French* in *Canada* call it *Bois de Plomb*, or *Leaden-wood*, becauſe the wood itſelf is as ſoft and as tough as lead. The bark of this ſhrub was made uſe of for ropes, baſkets, &c. by the *Indians*, whilſt they lived among the *Swedes*. And it is really very fit for that purpoſe, on account of its remarkable ſtrength and toughneſs, which is equal to that of the *Lime-tree* bark. The *Engliſh* and the *Dutch* in many parts of *North America*, and the *French* in *Canada*, employ this bark in all caſes, where

where we make uſe of *Lime-tree* bark in *Europe*. The tree itſelf is very tough, and you cannot eaſily ſeparate its branches without the help of a knife: ſome people employ the twigs for rods.

April the 20th. This day I found the *Strawberries* in flower, for the firſt time, this year: the fruit is commonly larger than that in *Sweden*; but it ſeems to be leſs ſweet and agreeable.

The annual harveſt, I am told, is always of ſuch a nature, that it affords plenty of bread for the inhabitants, though it turns out to greater advantage in ſome years than it does in others. A venerable ſeptuagenary *Swede*, called *Aoke Helm*, aſſured me, that in his time no abſolutely barren crop had been met with, but that the people had always had pretty plentiful crops. It is likewiſe to be obſerved, that the people eat their bread of maize, rye, or wheat, quite pure and free from the inferior kinds of corn, and clear of huſks, ſtalks, or other impurities. Many aged *Swedes* and *Engliſhmen* confirmed this account, and ſaid, that they could not remember any crop ſo bad as to make the people ſuffer in the leaſt, much leſs that any body was ſtarved to death, whilſt they were in *America*. Sometimes the price of

corn rose higher in one year than in another, on account of a great drought or bad weather, but still there was always corn sufficient for the consumption of the inhabitants. Nor is it likely that any great famine can happen in this country, unless it please God to afflict it with extraordinary punishments. The weather is well known, from more than sixty years experience. Here are no cold nights which hurt the germ. The wet is of short continuance, and the drought is seldom or never of long duration. But the chief thing is the great variety of corn. The people sow the different kinds, at different times and seasons, and though one crop turn out bad, yet another succeeds. The summer is so long, that of some species of corn they may get three crops. There is hardly a month from *May* to *October* or *November*, inclusive, in which the people do not reap some kind of corn, or gather some sort of fruit. It would indeed be a very great misfortune if a bad crop should happen; for here, as in many other places, they lay up no stores, and are contented that there is plenty of food for the present exigencies.

The Peach-trees were now every where in blossom; their leaves were not yet come out of the buds, and therefore the flowers

flowers shewed to greater advantage; their beautiful pale red colour had a very fine effect; and they sat so close that the branches were entirely clad with them. The other fruit-trees were not yet in flower; however the apple-blossoms began to appear.

The *English* and the *Swedes* of *America* give the name of *Currants* † to a shrub which grows in wet ground, and near swamps, and which was now in blossom; its flowers are white, have a very agreeable fragrancy, and grow in oblong bunches; the fruit is very good eating, when it is ripe; the *style (Stylus)* is thread-shaped *(filiformis)*, and shorter than the *Stamina*; it is divided in the middle, into five parts, or *Stigmata*. Dr. *Linnæus* calls it *Cratægus* *, and Dr. *Gronovius* calls it a *Mespilus* ‡.

April the 22d. The *Swedes* give the name of *Whipperiwill*, and the *English* that of *Whip-poor-will*, to a kind of nocturnal bird, whose voice is heard in *North America*, almost throughout the whole night. *Catesby* and *Edwards* both have described

† It must be carefully distinguished from what is called *Currants*, in *England*, which is the *Ribes rubrum*. F.

* *Cratægus tomentosa*, Linn. Spec. Pl. p. 682.

‡ *Mespilus inermis, foliis ovato-oblongis, serratis, subtus tomentosis.* Gronov. Fl. Virgin. 55.

and figured it *. Dr. *Linnæus* calls it a variety of the *Caprimulgus Europæus*, or *Goat-ſucker:* its ſhape, colour, ſize, and other qualities, make it difficult to diſtinguiſh them from each other. But the peculiar note of the *American* one diſtinguiſhes it from the *European* one, and from all other birds: it is not found here during winter, but returns with the beginning of ſummer. I heard it to-day, for the firſt time, and many other people ſaid, that they had not heard it before this ſummer; its *Engliſh* and *Swediſh* name is taken from its note; but, accurately ſpeaking, it does not call *Whipperiwill*, nor *Whip-poor-will*, but rather *Whipperiwhip*, ſo that the firſt and laſt ſyllables are accented, and the intermediate ones but ſlightly pronounced. The *Engliſh* change the call of this bird into *Whip-poor-will*, that it may have ſome kind of ſignification: it is neither heard nor ſeen in day-time; but ſoon after ſunſet it begins to call, and continues for a good while, as the cuckow does in *Europe*. After it has continued calling in a place for ſome time, it removes to another, and begins again: it commonly comes ſeveral times

* *Caprimulgus minor Americanus*. *Cateſb.* Nat. Hiſt. of *Carolina*, Vol. iii. t. 16. *Edwards*'s Nat. Hiſt. of Birds, t. 63.

times in a night, and settles close to the houses; I have seen it coming late in the evening, and settling on the steps of the house, in order to sing its song; it is very shy, and when a person stood still, it would settle close by him, and begin to call. It came to the houses in order to get its food, which consists of insects; and those always abound near the houses at night; when it sat and called its *whip-periwhip*, and saw an insect passing, it flew up and caught it, and settled again. Sometimes you hear four or five, or more, near each other, calling as it were for a wager, and raising a great noise in the woods. They were seldom heard in towns, being either extirpated there, or frightened away, by frequent shooting. They do not like to sit on trees, but are commonly on the ground, or very low in bushes, or on the lower poles of the enclosures. They always fly near the ground: they continue their calling at night till it grows quite dark; they are silent till the dawn of day comes on, and then they call till the sun rises. The sun seems to stop their mouths, or dazzle their eyes, so as to make them sit still. I have never heard them call in the midst of night, though I hearkened very attentively, on purpose to hear it; and

and many others have done the ſame. I am told they make no neſt, but lay two eggs in the open fields. My ſervant ſhot at one which ſat on a buſh near the houſe, and though he did not hit it, yet it fell down through fear, and lay for ſome time quite dead; but recovered afterwards. It never attempted to bite when it was held in the hands, only endeavouring to get looſe by ſtirring itſelf about. Above, and cloſe under the eyes, were ſeveral black, long, and ſtiff briſtles, as in other nocturnal birds. The *Europeans* eat it. Mr. *Cateſby* ſays, the *Indians* affirm, that they never ſaw theſe birds, or heard of them, before a certain great battle, in which the *Europeans* killed a great number of *Indians*. Therefore, they ſuppoſe that theſe birds, which are reſtleſs, and utter their plaintive note at night, are the ſouls of their anceſtors who died in battle.

April the 24th. To-day the *Cherry-trees* began to ſhew their bloſſoms; they had already pretty large leaves.

The *Apple-trees* likewiſe began to bloſſom; however the *Cherry-trees* were more forward: They likewiſe got a greeniſh hue from their leaves.

The *Mulberry-trees* * were yet quite naked;

* *Morus rubra.*

ked; and I was sorry to find that this tree is one of the latest in getting leaves, and one of the first which gets fruit.

April the 26th. This morning I travelled to *Penn's Neck*. The *Tulip-trees*, especially the tall ones, looked quite green, being covered with their leaves; this tree is therefore one of the earliest which get leaves.

To-day I saw the flowers of the *Sassafras-tree, (Laurus Sassafras)*. The leaves were not yet come out. The flowers have a fine smell.

The *Lupinus perennis* is abundant in the woods, and grows equally in good soil and in poor. I often found it thriving on very poor sandy fields, and on heaths, where no other plants will grow. Its flowers, which commonly appear in the middle of *May*, make a fine shew by their purple hue. I was told, that the cattle eat these flowers very greedily; but I was sorry to find very often that they were not so fond of it, as it is represented, especially when they had any thing else to eat; and they seldom touched it notwithstanding its fine green colour, and its softness: The horses eat the flowers, but leave the stalks and leaves. If the cattle eat this plant in spring, necessity and hunger give it a relish. This

country does not afford any green paſtures like the *Swediſh* ones; the woods are the places where the cattle muſt collect their food. The ground in the woods is chiefly flat, or with very little riſings. The trees ſtand far aſunder; but the ground between them is not covered with green ſods; for there are but few kinds of graſſes in the woods, and they ſtand ſingle and ſcattered. The ſoil is very looſe, partly owing to the dead leaves which cover the ground during a great part of the year. Thus the cattle find very little graſs in the woods, and are forced to be ſatisfied with all kinds of plants which come in their way, whether they be good or bad food. I ſaw for ſome time this ſpring, that the cattle bit off the tops and ſhoots of young trees, and fed upon them; for no plants were yet come up, and they ſtand in general but very thin, and ſcattered here and there, as I have juſt mentioned. Hence you may eaſily imagine that hunger compels the cattle to eat plants, which they would not touch, were they better provided for. However, I am of opinion, that it would be worth while to make uſe of this *Lupine* to mend dry ſandy heaths, and, I believe, it would not be abſolutely impoſſible to find out the means of making it agreeable to the cattle.

THE *Oaks* here have ſimilar qualities with the *European* ones. They keep their dead leaves almoſt during the whole winter, and are very backward in getting freſh ones; they had no leaves as yet, and were but juſt beginning to ſhew a few.

THE *Humming-bird*, which the *Swedes* call *King's-bird**, and which I have mentioned in a former volume, appeared hereabouts to-day, for the firſt time this ſpring.

NUMBERS of *Oil beetles*, *(Meloë Proſcarabæus)* ſat on the leaves of white *Hellebore*, *(Veratrum album)* and feaſted on them. I conſidered them a great while, and they devoured a leaf in a few minutes. Some of them had already eaten ſo much that they could hardly creep. Thus this plant, which is almoſt certain death to other animals, is their dainty food.

THE *Fire-flies* appeared at night, for the firſt time this year, and flew about between the trees, in the woods. It ſeemed, in the dark, as if ſparks of fire flew up and down. I will give a more particular account of them in another place.

TOWARDS night I went to *Raccoon*.

May the 1ſt. THE laſt night was ſo cold that the ground at ſun-riſing was as white

* *Kungsfogel.*

white as ſnow, from the hoary froſt. The *Swediſh* thermometer was a degree and a half below the freezing point. We obſerved no ice in the rivers or waters of any depth; but upon ſuch only as were about three inches deep, the ice lay to the thickneſs of one third part of a *line* *. The evening before, the wind was ſouth, but the night was calm. The apple-trees and cherry-trees were in full bloſſom. The peach-trees were almoſt out of flower. Moſt of the foreſt-trees had already got new and tender leaves, and moſt of them were in flower, as almoſt all kinds of oaks, the dog-wood, *(Cornus Florida)*, hiccory, wild prunes, ſaſſafras, horn-beam, beeches, &c.

The plants which were found damaged by the froſt, were the following. 1. The *Hiccory*. Moſt of the young trees of this kind had their leaves killed by the froſt, ſo that they looked quite black in the afternoon; the leaves were conſumed by froſt every where in the fields, near the marſhes, and in the woods. 2. The *black Oak*. Several of theſe trees had their leaves damaged by the froſt. 3. The *white Oak*. Some very young trees of this kind had loſt their leaves

* The tenth part of an inch.

leaves by the frost. 4. The blossoms of the *Cherry-trees* were hurt in several places. 5. The flowers of the *English Walnut-tree* were entirely spoiled by the frost. 6. The *Rhus glabra*. Some of these trees had already got leaves, and they were killed by the cold. 7. The *Rhus radicans*; the tender young trees of this kind suffered from the frost, and had their leaves partly killed. 8. The *Thalictra*, or *Meadow Rues*, had both their flowers and leaves hurt by the frost. 9. The *Podophyllum peltatum*. Of this plant there was not above one in five hundred hurt by the frost. 10. The *Ferns*. A number of them, which were lately come up, were destroyed. I must add several plants which were likewise hurt, but which I could not distinguish, on account of their smallness.

I went to several places this day.

The *Bartsia coccinea* grew in great abundance on several low meadows. Its flower-buds were already tinged with their precious scarlet, and adorned the meadows. It is not yet applied to any use, but that of delighting the sight.

One of the *Swedes* here had planted an *English* walnut-tree *(Juglans regia)* in his garden, and it was now about three yards high; it was in full blossom, and had already

already great leaves, whereas the black walnut-trees, which grow ſpontaneouſly in every part of this country, had not yet any leaves, or flowers. The laſt night's froſt had killed all the leaves of the *European* kind. Dr. *Franklin* told me afterwards, that there had been ſome *Engliſh* walnut-trees in *Philadelphia*, which came on very well; but that they were killed by the froſt.

I looked about me for the trees which had not yet got freſh leaves, and I found the following ones:

Juglans nigra, or the *Black Walnut-tree*.

Fraxinus excelſior, or the *Aſh*.

Acer Negundo, called the *White-aſh* here.

Nyſſa aquatica, the *Tupelo-tree*.

Dioſpyros Virginiana, or the *Perſimon*.

Vitis Labruſca, or the *Fox-grapes*; and

Rhus glabra, or the *Sumach*.

The trees whoſe leaves were coming out, were the following:

Morus rubra, the *Mulberry-tree*.

Fagus Caſtanea, the *Cheſnut-tree*.

Platanus occidentalis, or the *Water-beach*.

Laurus Saſſafras, the *Saſſafras-tree*.

Juglans alba, the *Hiccory*. Some trees of this kind had already large leaves, but others had none at all; the ſame difference, I believe,

I believe, exists likewise among the other species of hiccory.

THE *Virginian Cherry-tree* grows here and there, in the woods and glades: its leaves were already pretty large; but the flowers were not yet entirely open.

THE *Sassafras-tree* was now every where in flower; but its leaves were not yet quite disclosed.

THE *Liquidambar Styraciflua* or *Sweet Gum-tree*, grows in the woods, especially in wet soil, in and near purling rivulets: its leaves were now already sprouting out at its summit. This tree grows to a great thickness, and its height rivals that of the tallest firs and oaks; as it grows higher, the lower branches die and drop, and leave the stem at last quite smooth and strait, with a great crown at the very summit; the seeds are contained in round, dentated cones, which drop in autumn; and as the tree is very tall, so the high winds carry the seeds away to a great distance. I have already given an account of the use of this tree in the first volume, to which I must add the following account.

THE wood can be made very smooth, because its veins are extremely fine: but it is not hard; you can carve letters on it with a knife, which will seem to be en-

graved. Mr. *Lewis Evans* told me, from his own experience, that no wood in this country was more fit for making moulds for casting brass in, than this. I enquired of Mr. *Bartram*, "Whether he had found the rosin on this tree, which is so much praised in physic." He told me, "That a very odoriferous rosin always flows out of any cut or wound, which is made in the tree; but that the quantity here was too inconsiderable to recompense the labour of collecting it." This odoriferous rosin or gum first gave rise to the *English* name. The further you go to the *South*, the greater quantity of gum does the tree yield, so that it is easy to collect it. Mr. *Bartram* was of opinion, that this tree was properly calculated for the climate of *Carolina*, and that it was brought by several ways so far North as *New York*. In the southern countries the heat of the Sun fills the tree with gum, but in the northern ones it does not.

May the 2d. This morning I travelled down to *Salem*, in order to see the country.

The *Sassafras-tree* stood single in the woods, and along the fences, round the fields: it was now distinguishable at a distance for its fine flowers, which being now quite

quite open, made it look quite yellow. The leaves were not yet come out.

In some meadows the grass was already grown up pretty high: but it is to be observed, that these meadows were marshy, and that no cattle had been on them this year. These meadows are mown twice a year, *viz.* in *May*, and the end of *August*, or beginning of *August*, old style. I saw some meadows of this kind to-day, in which I saw grass which was now almost fit to be mown; and many meadows in *Sweden* have not such grass at the proper time of mowing, as these had now; these meadows lay in marshes and vallies, where the Sun had very great power: the grass consisted merely of *Cyperus-grass* or *Carex*.

The wild *Prune-trees* were now every where in flower; they grow here and there in the woods, but commonly near marshes and in wet ground; they are distinguishable by their white flowers: the fruit when ripe is eatable.

The *Cornus Florida*, or *Dogwood*, grows in the forests, on hills, on plains, in vallies, in marshes, and near rivulets. I cannot therefore say, which is its native soil; however, it seems that in a low but not a wet soil it succeeds best; it was now adorned with its great showy *Involucra*,

which render it conſpicuous even at a diſtance. At this time it is a pleaſure to travel through the woods, ſo much are they beautified by the bloſſoms of this tree. The flowers which are within the *Involucra* began to open to-day. The tree does not grow to any conſiderable height or thickneſs, but is about the ſize of our *Mountain Aſh (Sorbus aucuparia)*. There are three ſpecies of this tree in the woods; one with great white *Involucra*, another with ſmall white ones, and a third with reddiſh ones.

THE woods were now full of birds: I ſaw the leſſer ſpecies every where hopping on the ground, or creeping in buſhes, without any great degree of ſhineſs; it is therefore very eaſy for all kinds of ſnakes to approach and bite them. I believe that the rattleſnake has nothing to do but to ly ſtill, and without waiting long, ſome little bird or other will paſs by or run directly upon her, giving her an opportunity of catching it, without any enchantment.

SALEM is a little trading town, ſituated at ſome diſtance from the river *Delaware*. The houſes do not ſtand far aſunder, and are partly ſtone, and partly wood. A rivulet paſſes by the town, and falls into the *Delaware*. The inhabitants live by their ſeveral trades, as well as they can. In the neigh-

neighbourhood of *Salem* are some very low and swampy meadows; and therefore it is reckoned a very unwholesome place. Experience has shewn, that those who came hither from other places to settle, got a very pale and sickly look, though they arrived in perfect health, and with a very lively colour. The town is very easily distinguished about this time, by the disagreeable stench which arises from the swamps. The vapours of the putrid water are carried to those inhabitants which live next to the marshes; and enter the body along with the air, and through the pores, and thus are hurtful to health. At the end of every summer, the intermitting fevers are very frequent. I knew a young couple, who came along with me from *England* to *America*: soon after their arrival at *Philadelphia*, they went to *Salem*, in perfect health; but a few weeks after they fell sick, and before the winter was half over they were both dead.

MANY of the inhabitants plant *Saffron*; but it is not so good and so strong as the *English* and *French Saffron*. Perhaps it grows better by being laid up for some years, as tobacco does.

THE *Gossypium herbaceum*, or Cotton plant, is an annual plant; and several of the inhabitants of *Salem* had began to sow it.

Some had the ſeeds from *Carolina*, where they have great plantations of cotton; but others got it out of ſome cotton which they had bought. They ſaid, it was difficult, at firſt, to get ripe ſeeds from the plants which were ſown here; for the ſummer in *Carolina*, from whence their firſt ſeed came, is both longer and hotter than it is here. But after the plants have been more uſed to the climate, and haſtened more than they were formerly, the ſeeds are ripe in due time.

At night I returned to *Raccoon*.

May the 4th. Crab-trees are a ſpecies of wild apple trees, which grow in the woods and glades, but eſpecially on little hillocks, near rivers *. In *New Jerſey* the tree is rather ſcarce; but in *Penſylvania* it is plentiful. Some people had planted a ſingle tree of this kind near their farms, on account of the fine ſmells which its flowers afford. It had begun to open ſome of its flowers about a day or two ago; however, moſt of them were not yet open. They are exactly like the bloſſoms of the common apple-trees, except that the colour is a little more reddiſh in the *Crab-trees*; though ſome kinds of the cultivated trees have flowers

* *Pyrus coronaria.* Linn. Sp. Plant, p. *Malus ſylveſtris, floribus odoratis.* Gronov. Fl. Virginica. 55.

flowers which are very near as red: but the ſmell diſtinguiſhes them plainly; for the wild trees have a very pleaſant ſmell, ſomewhat like the raſp-berry. The apples, or crabs, are ſmall, ſour, and unfit for any thing but to make vinegar of. They ly under the trees all the winter, and acquire a yellow colour. They ſeldom begin to rot before ſpring comes on.

I CANNOT omit an obſervation here. The *Crab-trees* opened their flowers only yeſterday and to-day; whereas, the cultivated apple-trees, which are brought from *Europe*, had already loſt their flowers. The wild cherry-trees did not flower before the 12th of *May*; on the other hand, the cultivated or *European* ones, had already opened their bloſſoms on the 24th of *April*. The black walnut-trees of this country had neither leaves nor flowers, when the *European* kind has large leaves and bloſſoms. From hence it appears, that trees brought over from *Europe*, of the ſame kind with the wild trees of *America*, flower much ſooner than the latter. I cannot ſay what is the reaſon of this forwardneſs of the *European* trees in this country, unleſs they bring forth their bloſſoms as ſoon as they get a certain degree of warmth, which they have in their native country. It ſeems, the *Eu-*

ropean trees do not expect, after a considerable degree of warmth, any such cold nights as will kill their flowers; for, in the cold countries, there seldom happen any hot days succeeded by such cold nights as will hurt the flowers considerably. On the contrary, the wild trees in this country are directed by experience, (if I may so speak) not to trust to the first warmth; but they wait for a greater heat, when they are already safe from cold nights. Therefore, it happens often, that the flowers of the *European* trees are killed by the frosts here; but the native trees are seldom hurt, though they be of the same kind with the *European* ones. This is a manifest proof of the wisdom of the Creator.

May the 5th. EARLY this morning I went to *Rapaapo*, which is a great village, whose farms ly all scattered. It was inhabited merely by *Swedes*, and not a single *Englishman*, or people of any other nation, lived in it: therefore they have preserved their native *Swedish* tongue, and mixed but few *English* words with it. The intention of my journey was partly to see the place, and to collect plants and other natural curiosities there; and partly to find the places where the *White Cedar*, or *Cupressus thyoides*, grows.

THE *Mayflowers*, as the *Swedes* call them, were plentiful in the woods where-ever I went to-day; especially on a dry soil, or one that is somewhat moist. The *Swedes* have given them this name, because they are in full bloſſom in *May*. Some of the *Swedes* and the *Dutch* call them *Pinxterbloem, (Whitſunday flowers)*, as they really are in bloſſom about *Whitſuntide*. The *Engliſh* call them *Wild Honeyſuckles*; and at a diſtance they have ſome ſimilarity to the *Honeyſuckle*, or *Lonicera*. Dr. *Linnæus*, and other botaniſts, call it an *Azalea**. Its flowers were now open, and added a new ornament to the woods, being little inferior to the flowers of the honeyſuckle and *Hedyſarum*. They ſit in a circle round the ſtem's extremity, and have either a dark red or a lively red colour; but, by ſtanding for ſome time, the ſun bleaches them, and at laſt they get a whitiſh hue. I know not why *Colden* calls them yellow †. The height of the buſh is not always alike. Some were as tall as a full grown man, and taller, others were but low, and ſome were not above a palm from the ground; yet they were

* *Azalea nudiflora.* Linn. Spec. Plant. p. 214. *Azalea ramis infrà flores nudis.* Gron. Virg. 21.

† *Azalea erecta, foliis ovatis, integris, alternis, flore luteo, piloſo, præcoci.* Cold. Ebor. 25.

were all full of flowers. The people have not yet found that this plant may be applied to any uſe; they only gather the flowers, and put them in pots, becauſe they are very ſhewy. They have ſome ſmell; but I cannot ſay it is very pleaſant. However, the beauty of the colour entitles them to a place in every flower-garden.

To-day I ſaw the firſt ear of this year's rye. In *Sweden*, rye begins to ſhew its ears about *Ericmas*, that is, about the 18th of *May*, old ſtile*. But in *New Sweden*, the people ſaid, they always ſaw the ears of rye in *April*, old ſtile; whether the ſpring begins late or early. However, in ſome years the ears come early, and in others late, in *April*. This ſpring was reckoned one of the late ones.

Bullfrogs† are a large ſpecies of frogs, which I had an opportunity of hearing and ſeeing to-day. As I was riding out, I heard a roaring before me; and I thought it was a bull in the buſhes, on the other ſide of the dyke, though the ſound was rather more hoarſe than that of a bull. I was however afraid, that a bad goring bull might be near me, though I did not ſee him;

* Accordingly about the 29th of *May*, new ſtile.

† *Rana boans.* Linn. Syſt. 1. p. 338. *Rana maxima, Americana, aquatica.* Cateſb. Carol. II. 72.

him; and I continued to think ſo till ſome hours after, when I talked with ſome *Swedes* about the *Bullfrogs*, and, by their account, I immediately found that I had heard their voice; for the *Swedes* told me, that there were numbers of them in the dyke. I afterwards hunted for them. Of all the frogs in this country, this is doubtleſs the greateſt. I am told, that towards autumn, as ſoon as the air begins to grow a little cool, they hide themſelves under the mud, which lies at the bottom of ponds and ſtagnant waters, and ly there torpid during winter. As ſoon as the weather grows mild, towards ſummer, they begin to get out of their holes, and croak. If the ſpring, that is, if the mild weather, begins early, they appear about the end of *March*, old ſtile; but if it happens late, they tarry under water till late in *April*. Their places of abode are ponds, and bogs with ſtagnant water; they are never in any flowing water. When many of them croak together, they make an enormous noiſe. Their croak exactly reſembles the roaring of an ox or bull, which is ſomewhat hoarſe. They croak ſo loud, that two people talking by the ſide of a pond cannot underſtand each other. They croak all together; then ſtop a little, and begin again. It ſeems as if they had a captain

tain among them: for when he begins to croak, all the others follow; and when he ſtops, the others are all ſilent. When this captain gives the ſignal for ſtopping, you hear a note like *poop* coming from him. In day-time they ſeldom make any great noiſe, unleſs the ſky is covered. But the night is their croaking time; and, when all is calm, you may hear them, though you are near a mile and a half off. When they croak, they commonly are near the ſurface of the water, under the buſhes, and have their heads out of the water. Therefore, by going ſlowly, one may get cloſe up to them before they go away. As ſoon as they are quite under water, they think themſelves ſafe, though the water be very ſhallow.

Sometimes they ſit at a good diſtance from the pond; but as ſoon as they ſuſpect any danger, they haſten with great leaps into the water. They are very expert at hopping. A full-grown *Bullfrog* takes near three yards at one hop. I have often been told the following ſtory by the old *Swedes*, which happened here, at the time when the *Indians* lived with the *Swedes*. It is well known, that the *Indians* are excellent runners; I have ſeen them, at Governor *Johnſon*'s, equal the beſt horſe in its ſwifteſt courſe,

course, and almost pass by it. Therefore, in order to try how well the bull-frogs could leap, some of the *Swedes* laid a wager with a young *Indian*, that he could not overtake the frog, provided it had two leaps before hand. They carried a bull-frog, which they had caught in a pond, upon a field, and burnt his back-side; the fire, and the *Indian*, who endeavoured to be closely up with the frog, had such an effect upon the animal, that it made its long hops across the field, as fast as it could. The *Indian* began to pursue the frog with all his might at the proper time: the noise he made in running frightened the poor frog; probably it was afraid of being tortured with fire again, and therefore it redoubled its leaps, and by that means it reached the pond before the *Indian* could over-take it.

In some years they are more numerous than in others: nobody could tell, whether the snakes had ever ventured to eat them, though they eat all the lesser kinds of frogs. The women are no friends to these frogs, because they kill and eat young ducklings and goslings: sometimes they carry off chickens that come too near the ponds. I have not observed that they bite when they are held in the hands, though they have little teeth; when they are beaten, they cry

out

out almoſt like children. I was told that ſome eat the thighs of the hind legs, and that they are very palatable.

A TREE which grows in the ſwamps here, and in other parts of *America*, goes by the name of *White Juniper-tree*. Its ſtem indeed looks like one of our old tall and ſtrait juniper-trees in *Sweden*: but the leaves are different, and the wood is white. The *Engliſh* call it *White Cedar*, becauſe the boards which are made of the wood, are like thoſe made of cedar. But neither of theſe names are juſt, for the tree is of the cypreſs kind *. It always grows in wet ground or ſwamps: it is therefore difficult to come to them, becauſe the ground between the little hillocks is full of water. The trees ſtand both on the hillocks and in the water: they grow very cloſe together, and have ſtrait, thick, and tall ſtems; but they were greatly reduced in number to what they have been before. In ſuch places where they are left to grow up, they grow as tall and as thick as the talleſt fir-trees; they preſerve their green leaves both in winter and ſummer; the tall ones have no branches on the lower part of the ſtem.

THE marſhes where theſe trees grow are called *Cedar Swamps*. Theſe cedar ſwamps are

* *Cupreſſus thyoides*. Linn. Spec. pl p. 1422. Cypreſſus Americana, fructu minimo. *Miller*'s Gard. Dictionary.

are numerous in *New Jersey*, and likewise in some parts of *Pensylvania* and *New York*. The most northerly place, where it has been hitherto found, is near *Goshen* in *New York*, under forty-one degrees and twenty-five minutes of north latitude, as I am informed by Dr. *Colden*. For to the North of *Goshen*, it has not been found in the woods. The white cedar is one of the trees, which resist the most to putrefaction; and when it is put above ground, it will last longer than under ground: therefore it is employed for many purposes; it makes good fences, and posts which are to be put into the ground; but in this point, the red cedar is still preferable to the white; it likewise makes good canoes. The young trees are employed for hoops round barrels, tuns, &c. because they are thin and pliable; the thick and tall trees afford timber, and wood for cooper's work. The houses which are built of it, surpass in duration, those which are built of *American* oak. Many of the houses in *Rapaapo* were made of this white cedar wood; but the chief thing which the white cedar affords is the best kind of shingles. The white cedar shingles are preferred to all others for several reasons; first, they are more durable than any others made of *American* wood, the red cedar shingles

gles excepted; ſecondly, they are very light, ſo that no ſtrong beams are requiſite to ſupport the roof. For the ſame reaſon it is unneceſſary to build thick walls, becauſe they are not preſſed by heavy roofs. When fires break out, it is leſs dangerous to go under or along the roofs, becauſe the ſhingles being very light can do little hurt by falling; they ſuck the water, being ſomewhat ſpungy, ſo that the roofs can eaſily be wetted in caſe of a fire: however, their fatneſs occaſions that the water does not hurt them, but evaporates eaſily. When they burn and are carried about by the wind, they have commonly what is called a dead coal, which does not eaſily ſet fire where it alights. The roofs made of theſe ſhingles can eaſily be cut through, if required, becauſe they are thin, and not very hard; for theſe qualities the people in the country, and in the towns, are very deſirous of having their houſes covered with white cedar ſhingles, if the wood can be got. Therefore all churches, and the houſes of the more ſubſtantial inhabitants of the towns, have ſhingle roofs. In many parts of *New York* province, where the white cedar does not grow, the people, however, have their houſes roofed with cedar ſhingles, which they get from other parts. To that purpoſe great quantities of ſhingles are annually exported from *Eggharbour* and other

other parts of *New Jerſey*, to the town of *New York*, from whence they are diſtributed throughout the province. A quantity of white cedar wood is likewiſe exported every year to the *Weſt-Indies*, for ſhingles, pipe ſtaves, &c. Thus the inhabitants are very buſy here, not only to leſſen the number of theſe trees, but even to extirpate them entirely. They are here (and in many other places) in regard to wood, bent only upon their own preſent advantage, utterly regardleſs of poſterity. By this means many cedar ſwamps are already quite deſtitute of cedars, having only young ſhoots left; and I plainly obſerved, by counting the circles round the ſtem, that they do not grow up very quickly, but require a great deal of time before they can be cut for timber. It is well known that a tree gets only one circle every year; a ſtem, eighteen inches in diameter, had one hundred and eight circles round the thicker end; another, ſeventeen inches in diameter, had a hundred and ſixteen; and another, two feet in diameter, had one hundred and forty-two circles upon it. Thus near eighty years growth is required, before a white cedar raiſed from ſeed can be uſed for timber. Among the advantages which the white cedar ſhingles have over others, the

people reckon their lightneſs. But this good and uſeful quality may in future times turn out very diſadvantageous to *Philadelphia*, and other places where the houſes are roofed with cedar ſhingles; for as the roofs made of theſe ſhingles are very light, and bear but a trifling weight on the walls, ſo the people have made the walls but very thin. I meaſured the thickneſs of the walls of ſeveral houſes here, of three ſtories high (cellar and garret not included), and found moſt of them nine inches and a half, and ſome ten inches thick; therefore it is by no means ſurpriſing, that violent hurricanes ſometimes make the brick gable-ends to vibrate apparently, eſpecially on ſuch houſes as have a very open ſituation. And ſince the cedar-trees will ſoon be wanting in this country, and the preſent roofs when rotten muſt be ſupplied with heavier ones, of tiles, or of other wood, it is more than probable, that the thin walls will not be able to bear ſuch an additional weight, and will either break, or require to be ſupported by props: or elſe the whole houſe muſt be pulled down and rebuilt with thicker walls. This obſervation has already been made by others. Some of the people here make uſe of the chips of white cedar inſtead of tea, aſſuring me that they preferred it in regard

regard to its wholesomeness to all foreign teas. All the inhabitants here were of opinion, that the water in the cedar swamps is wholesomer than any other drink: it creates a great appetite, which they endeavoured to prove by several examples. They ascribed this quality to the water itself, which is filled with the rosin of the trees, and to the exhalations which came from the trees, and can easily be smelled. The people likewise thought that the yellowish colour of the water, which stands between the cedar trees, was owing to the rosin, which comes out of the roots of these trees. They likewise all agreed, that this water is always very cold in the hottest season, which may be partly owing to the continual shade it is in. I knew several people who were resolved to go to these cedar swamps, and use the waters for the recovery of their appetite. Mr. *Bartram* planted a white cedar in a dry soil, but it could not succeed there: he then put it into a swampy ground, where it got as it were new life, and came on very well; and though it was not taller than a man, yet it was full of cones. Another thing is very remarkable, with regard to the propagation of this tree: Mr. *Bartram* cut its branches in spring two years successively, and put them into the swampy soil,

where they ſtruck roots, and ſucceeded very well. I have ſeen them myſelf.

THE *red Juniper-tree* is another tree which I have mentioned very frequently in the courſe of my account. The *Swedes* have given it the name of red Juniper, becauſe the wood is very red and fine within. The *Engliſh* call it *red Cedar*, and the *French Cedre rouge*. However, the *Swediſh* name is the moſt proper, as the tree belongs to the *Junipers* *. At its firſt growth it has a deal of ſimilarity to the *Swediſh Juniper* †, but after it is grown up it gets quite different leaves. The berry exactly reſembles that of the *Swediſh Juniper*, in regard to its colour and ſhape; however, they are not ſo big, though the red *Cedar* grows very tall. At *Raccoon* theſe trees ſtood ſingle, and were not very tall. But at other places I have ſeen them ſtanding together in cluſters; they like the ſame ground as the common *Swediſh Juniper*, eſpecially on the riſing banks of rivers, and on other riſing grounds, in a dry, and frequently in a poor ſoil. I have ſeen them growing in abundance, as thick and tall as the talleſt fir-trees, on poor dry and ſandy heaths. Towards *Canada*, or in the

* *Juniperus Virginiana. Linn. Spec. pl. p.* 114.
† *Juniperus communis. Linn. Spec. pl. p.* 1470.

the most northerly places, where I have seen them, they commonly choose the steep sides of the mountains, and there they grow promiscuously with the common *Juniper*. The most northerly places where I have found them wild in the woods, is in *Canada*, eighteen *French* miles to the southward of the Fort *Saint Jean*, or *St. John*, in about 44° 35′ North Latitude. I have likewise seen it growing very well in a garden, on the island of *Magdalene* *, belonging to the then governor of *Montreal*, *Monsieur le Baron de Longueuil*. But it had been got at more southerly places, and was transplanted here. Of all the woods in this country, this is without exception the most durable, and withstands putrefaction longer than any other; it is therefore employed in all such cases where it is most liable to rot, especially for all kinds of posts which are to be put into the ground. Some people say, that if an iron be put into the ground along with a pole of cedar, the iron would be half corroded by rust in the same time that the wood would be rotten. In many places both the fences, and the posts belonging to them, are made

* An island in the river St. *Lawrence*, close by the town of *Montreal*, in *Canada*.

of red cedar. The beſt canoes, conſiſting of a ſingle piece of wood, are made of red cedar; for they laſt longer than any others, and are very light. In *New York* I have ſeen pretty large yachts build of red cedar. Several yachts which go from *New York* to *Albany*, up the river *Hudſon*, are built in a different manner, as I have mentioned in the firſt volume *. In *Philadelphia* they cannot make any yachts or other boats of red cedar, becauſe the quantity and the ſize of the trees will not allow of it. For the ſame reaſon they do not roof their houſes with red cedar ſhingles; but in ſuch places where it is plentiful, it makes excellent good roofs. The heart of this cedar is of a fine red colour, and whatever is made of it looks very fine, and has a very agreeable and wholeſome ſmell. But the colour fades by degrees, or elſe the wood would be exceedingly proper for cabinet work. I ſaw a parlour in the country ſeat of Mr *Norris*, one of the Members of the *Penſylvanian* Houſe of Aſſembly, wainſcotted many years ago with boards of red cedar. Mr *Norris* aſſured me that the cedar

* See vol. I. page 115. The lower part of the yachts, which is continually under water, is made of black oak; the upper part is built of red cedar, becauſe it is ſometimes above and ſometimes in the water.

cedar looked exceedingly well in the beginning, but it was quite faded when I saw it, and the boards looked very shabby, especially the boards near the window had entirely lost their colour; so that Mr *Norris* had been obliged to put mahogany in their stead: however, I was told, that the wood will keep its colour if a thin varnish is put upon it whilst it is fresh, and just after it has been planed, and if care is taken that the wood is not afterwards rubbed or hurt. At least it makes the wood keep its colour much longer than commonly. Since it has a very pleasant smell, when fresh, some people put the shavings and chips of it among their linen to secure it against being worm-eaten. Some likewise get bureaus, &c. made of red cedar, with the same view. But it is only useful for this purpose as long as it is fresh, for it loses its smell after some time, and is then no longer good for keeping off insects. It is sometimes sent to *England*, as timber, and sells very well. In many places round *Philadelphia*, in the seats of the gentry, there was commonly an avenue, with a row of these trees planted on both sides, leading from the high road to the house. The lower branches were cut, and only a fine crown left. In winter,

when moſt other trees have loſt ther leaves, this looks very fine. This tree has likewiſe a very ſlow growth; for a ſtem, thirteen inches and a quarter in diameter, had one hundred and eighty-eight rings, or annual circles, and another, eighteen inches in diameter, had at leaſt two hundred and fifty, for a great number of the rings were ſo fine that they could not be counted. This tree is propagated in the ſame manner as the common Juniper-tree is in *Sweden*, viz. chiefly by birds, which eat the berries and emit the ſeeds entire. To encourage the planting of this uſeful tree, a deſcription of the method of doing it, written by Mr *Bartram*, was inſerted in a *Penſylvania* almanack, called *Poor Richard Improved*, for the year 1749. In it was explained the manner of planting and augmenting the number of theſe trees, and mention is made of ſome of the purpoſes to which they may be employed.

In the evening I returned to *Raccoon*.

May the 6th. The Mulberry-trees (*Morus rubra*) about this time began to bloſſom, but their leaves were yet very ſmall. The people divided them into male and female trees or flowers; and ſaid that thoſe which never bore any fruit were males, and thoſe which did, females.

Smilax

SMILAX *laurifolia* was superabundant in all the swamps near this place. Its leaves were now beginning to come out, for it sheds them all every winter; it climbs up along trees and shrubs, and runs across from one tree or bush to another: by this means it shuts up the passage between the trees, fastening itself every where with its cirrhi or tendrils, and even on people, so that it is with the utmost difficulty one must force a passage in the swamps and woods, where it is plentiful; the stalk towards the bottom is full of long spines, which are as strong as the spines of a rose-bush, and catch hold of the clothes, and tear them: this troublesome plant may sometimes bring you into imminent danger, when botanizing or going into the woods, for, not to mention that the cloaths must be absolutely ruined by its numberless spines, it occasions a deep shade in the woods, by crossing from tree to tree so often; this forces you to stoop, and even to creep on all fours through the little passages which are left close to the ground, and then you cannot be careful enough to prevent a snake (of which there are numbers here) from darting into your face. The stalk of the plant has the same colour as the young rose-bushes. It is quite green and

and ſmooth between the ſpines, ſo that a ſtranger would take it to be a kind of thorn-buſh, in winter, when it is deſtitute of leaves.

May the 8th. THE trees hereabouts were now ſtocked with innumerable *Caterpillars*; one kind eſpecially was obſervable, which is worſe than all the others. They immediately formed great white webs, between the branches of the trees, ſo that they were perceptible, even at a diſtance; in each of theſe webs were thouſands of *Caterpillars*, which crept out of them afterwards, and ſpread chiefly upon the apple-trees. They conſumed the leaves, and often left not one on a whole branch. I was told, that ſome years ago they did ſo much damage, that the apple-trees and peach-trees hardly bore any fruit at all; becauſe they had conſumed all the leaves, and expoſed the naked trees to the intenſe heat of the ſun, by which means ſeveral of the trees died. The people took the following method of killing theſe *Caterpillars*: They fixed ſome ſtraw or flax on a pole, ſet it on fire, and held it under the webs or neſts; by which a part was burnt, and a part fell to the ground. However, numbers of the *Caterpillars* crept up the trees again, which could have been prevented, if they had been trod

trod upon, or killed any other way. I called chickens to such places where they crept on the ground in numbers; but they would not eat them. Nor did the wild birds like them; for the trees were full of these webs, though whole flights of little birds had their nests in the gardens and orchards.

May the 18th. THOUGH it was already pretty late in *May*, yet the nights were very dark here. About an hour after sun-set, it was so dark, that it was impossible to read in a book, though the type was ever so large. About ten o'clock, on a clear night, the dark was so much increased, that it looked like one of the darkest star-light nights in autumn, in *Sweden*. It likewise seemed to me, that though the nights were clear, yet the stars did not give so great a light as they do in *Sweden*. And as, about this time, the nights are commonly dark, and the sky covered with clouds; so I would compare them only to dark and cloudy *Swedish* winter nights. It was therefore, at this time of the year, very difficult to travel in such cloudy nights; for neither man nor horse could find their way. The nights, in general, seem very disagreeable to me, in comparison to the light and glorious summer nights of *Sweden*. Ignorance sometimes makes us think slightly of

our

our country. If other countries have their advantages, *Sweden* is not deſtitute of matter to boaſt of on this head: it likewiſe has its peculiar advantages; and upon weighing the advantages and inconveniencies of different places, *Sweden* will be found to be not inferior to any of them.

I WILL briefly mention in what points I think *Sweden* is preferable to this part of *America*; and why I prefer *Old Sweden* to *New Sweden*.

THE nights are very dark here all the ſummer; and in winter, they are quite as dark, if not darker, than the winter nights in *Sweden*; for here is no kind of *Aurora Borealis*, and the ſtars give a very faint light. It is very remarkable if an *Aurora Borealis* appears once or twice a year. The winters here bring no ſnow, to make the nights clear, and to make travelling more ſafe and eaſy. The cold is, however, frequently as intenſe as in *Old Sweden*. The ſnow which falls lies only a few days, and always goes off with a great deal of wet. The *Rattle-ſnakes*, *Horned-ſnakes*, *red-bellied*, *green*, and other poiſonous *Snakes*, againſt whoſe bite there is frequently no remedy, are in great plenty here. To theſe I muſt add the wood-lice, with which the foreſts are ſo peſtered, that it is impoſſible to paſs through a buſh without

out having a whole army of them on your cloaths, or to ſit down, though the place be ever ſo pleaſant. The inconvenience and trouble they cauſe, both to man and beaſt, I have deſcribed in the *Memoirs of the Royal Swediſh Academy of Sciences*. The weather is ſo inconſtant here, that when a day is moſt exceſſively hot, the next is often ſenſibly cold. This ſudden change often happens in one day; and few people can ſuffer theſe changes, without impairing their health. The heat in ſummer is exceſſive, and the cold in winter often very piercing. However, one can always ſecure one's ſelf againſt the cold; but when the great heat is of any duration, there is hardly any remedy againſt it. It tires one ſo, that one does not know which way to turn. It has frequently happened, that people who walked into the fields, dropped down dead, on account of the violence of the heat. Several diſtempers prevail here; and they increaſe every year. Nobody is left unattacked by the intermitting fever; and many people are forced to ſuffer it every year, together with other diſeaſes. Peaſe cannot be ſown, on account of the inſects which conſume them*. There are worms in the grains of rye, and numbers of them are in the cherry-trees.

* *Bruchus Piſi.*

trees. The caterpillars often eat all the leaves from the trees, ſo that they cannot bear fruit in that year; and numbers die every year, both of fruit-trees and foreſt-trees. The graſs in the meadows is likewiſe conſumed by a kind of worms, and another ſpecies cauſe the plumbs to drop, before they are half ripe. The oak here affords not near ſo good timber as the *European* oak. The fences cannot ſtand above eighteen years. The houſes are of no long duration. The meadows are poor, and what graſs they have is bad. The paſture for cattle in the foreſts, conſiſts of ſuch plants as they do not like, and which they are compelled to eat by neceſſity; for it is difficult to find a ſingle graſs in great foreſts, where the trees ſtand far aſunder, and where the ſoil is excellent. For this reaſon, the cattle are forced, during almoſt the whole winter and part of the ſummer, to live upon the young ſhoots and branches of trees, which ſometimes have no leaves: therefore, the cows give very little milk, and decreaſe in ſize every generation. The houſes are extremely unfit for winter habitations. Hurricanes are frequent, which overthrow trees, carry away roofs, and ſometimes houſes, and do a great deal of damage. Some of theſe inconveniencies might be remedied by art; but

but others will either admit of no alteration, or they will at least cost vast trouble. Thus every country has its advantages, and its defects: happy is he who can content himself with his own.

The rye grows very ill in most of the fields, which is chiefly owing to the carelessness in agriculture, and to the poorness of the fields, which are seldom or never manured. After the inhabitants have converted a tract of land into fields, which had been a forest for many centuries together, and which consequently had a very fine soil, they use it as such, as long as it will bear any corn; and when it ceases to bear any, they turn it into pastures for the cattle, and take new corn-fields in another place, where a fine soil can be met with, and where it has never been made use of for this purpose. This kind of agriculture will do for some time; but it will afterwards have bad consequences, as every one may clearly see. A few of the inhabitants, however, treated their fields a little better: the *English* in general have carried agriculture to a higher degree of perfection than any other nation. But the depth and richness of the soil, which those found here who came over from *England*, (as they were preparing land for ploughing which had been covered with

with woods from times immemorial) misled them, and made them careless husbandmen. It is well known, that the *Indians* lived in this country for several centuries before the *Europeans* came into it; but it is likewise known, that they lived chiefly by hunting and fishing, and had hardly any fields. They planted maize, and some species of beans and gourds; and at the same time it is certain, that a plantation of such vegetables as serve an *Indian* family during one year, take up no more ground than a farmer in our country takes to plant cabbage for his family upon; at least, a farmer's cabbage and turnep ground, taken together, is always as extensive, if not more so, than the corn-fields and kitchen-gardens of an *Indian* family. Therefore, the *Indians* could hardly subsist for one month upon the produce of their gardens and fields. Commonly, the little villages of *Indians* are about twelve or eighteen miles distant from each other. From hence one may judge, how little ground was formerly employed for corn-fields; and the rest was overgrown with thick and tall trees. And though they cleared (as is yet usual) new ground, as soon as the old one had quite lost its fertility; yet such little pieces as they made use of were very inconsiderable, when compared to

to the vast forests which remained. Thus the upper fertile soil increased considerably, for centuries together; and the *Europeans* coming to *America* found a rich and fine soil before them, lying as loose between the trees as the best bed in a garden. They had nothing to do but to cut down the wood, put it up in heaps, and to clear the dead leaves away. They could then immediately proceed to ploughing, which in such loose ground is very easy; and having sown their corn, they got a most plentiful harvest. This easy method of getting a rich crop has spoiled the *English* and other *European* inhabitants, and induced them to adopt the same method of agriculture which the *Indians* make use of; that is, to sow uncultivated grounds, as long as they will produce a crop without manuring, but to turn them into pastures as soon as they can bear no more, and to take in hand new spots of ground, covered since time immemorial with woods, which have been spared by the fire or the hatchet ever since the creation. This is likewise the reason why agriculture, and the knowledge of this useful branch, is so imperfect here, that one can learn nothing on a great tract of land, neither of the *English*, nor of the *Swedes*, *Germans*, *Dutch*, and *French*; except that, from their gross mis-

takes and careleſsneſs for futurity, one finds opportunities every day of making all ſorts of obſervations, and of growing wiſe at the expence of other people. In a word, the corn-fields, the meadows, the foreſts, the cattle, &c. are treated with equal careleſsneſs; and the *Engliſh* nation, ſo well ſkilled in theſe branches of huſbandry, is with difficulty found out here. We can hardly be more laviſh of our woods in *Sweden* and *Finland* than they are here: their eyes are fixed upon the preſent gain, and they are blind to futurity. Every day their cattle are harraſſed by labour, and each generation decreaſes in goodneſs and ſize, by being kept ſhort of food, as I have before mentioned. On my travels in this country I obſerved ſeveral plants, which the horſes and cows preferred to all others. They were wild in this country, and likewiſe grew well on the drieſt and pooreſt ground, where no other plants would ſucceed. But the inhabitants did not know how to turn this to their advantage; owing to the little account made of Natural Hiſtory, that ſcience being here (as in other parts of the world) looked upon as a mere trifle, and the paſtime of fools. I am certain, and my certainty is founded upon experience, that by means of theſe plants, in the ſpace of a few years, I have been

been able to turn the poorest ground, which would hardly afford food for a cow, into the richest and most fertile meadow, where great flocks of cattle have found superfluous food, and are grown fat upon. I own, that these useful plants were not to be found on the grounds of every planter: but with a small share of natural knowledge, a man would easily collect them in the places where they were to be got. I was astonished, when I heard the country people complaining of the badness of the pastures; but I likewise perceived their negligence, and often saw excellent plants growing on their own grounds, which only required a little more attention and assistance from their unexperienced owners. I found every where the wisdom and goodness of the Creator; but too seldom saw any acknowledgment, or adequate estimation of it, among men.

O fortunatos nimium sua si bona norint
Agricolas! VIRG. Georgic.

I HAVE been led to these reflections, which may perhaps seem foreign to my purpose, by the bad and neglected state of agriculture in every part of this continent. I likewise intended to shew the reason why this journal is so thinly stocked with œconomical advantages in the several branches of husbandry. I do not however deny, that I have sometimes found

one or two ſkilful œconomiſts, but they were very ſcarce.

Birds of prey which purſue the poultry are found in abundance here, and if poſſible more plentiful than in *Sweden*. They enjoy great liberty here, as there are ſtill great foreſts in many places, from whence they can come unawares upon chickens and ducks. To the birds of prey it is quite indifferent whether the woods conſiſt of good or bad trees, provided they are in ſhade. At night the owls, which are very numerous, endanger the ſafety of the tame fowls. They live chiefly in marſhes, give a diſagreeable ſhriek at night, and attack the chickens, which commonly rooſt at night in the apple-trees, peach-trees, and cherry-trees, in the garden. But ſince they are very buſy in clearing this country of woods, as we are in *Sweden* and *Finland*, it may be of uſe for expoſing the birds of prey, more than they are now, and for depriving them of the opportunities of doing miſchief with ſo much eaſe.

The thick foreſts of *America* contain numbers of ſtags; they do not ſeem to be a different ſpecies from the *European* ſtags. An *Engliſhman* was poſſeſſed of a tame hind. It is obſervable that though theſe creatures are very ſhy when wild in the woods

woods and the cedar ſwamps, which are very much frequented by them, yet they can be tamed to ſuch a degree, if taken young, that they will come of their own accord to people, and even to ſtrangers: This hind was caught when it was but very little; the colour of the whole body was a dirty reddiſh brown, the belly and the under ſide of the tail excepted, which were white; the ears were grey; the head, towards the ſnout, was very narrow, but upon the whole the creature looked very fine. The hair lay cloſe together, and was quite ſhort; the tail reached almoſt to the bend of the knee, near which, on the inſide of each hind-foot, was a *knob* or *callus*. The poſſeſſor of the hind ſaid, that he had tamed ſeveral ſtags, by catching them whilſt they were very young. It was now big with young ones. It had a little bell hung about its neck, that by walking in the woods, the people might know it to be tame, and take care not to ſhoot it. It was at liberty to go where it pleaſed, and to keep it confined would have been a pretty hard taſk, as it could leap over the higheſt encloſures. Sometimes it went far into the woods, and frequently ſtaid away a night or two, but afterwards returned home like other cattle.

When it went into the woods, it was often accompanied by wild ſtags, and decoyed them even into the very houſes, eſpecially in rutting time, giving its maſter numerous opportunities of ſhooting the wild ſtags, almoſt at his door. Its ſcent was excellent, and when it was turned towards the wind, I often ſaw it riſing and looking towards that part, though I did not ſee any people on the road, but they commonly appeared about an hour after. As ſoon as the wild ſtags have the ſcent of a man, they make off. In winter the man fed the hind with corn and hay; but in ſummer it went out into the woods and meadows, ſeeking its own food, eating both graſs and other plants: it was now kept in a meadow; it did chiefly eat clover, the leaves of hiccory, of the *Andromeda paniculata*, and the *Geranium maculatum*. It was likewiſe contented with the leaves of the common plantane, or *Plantago*, graſſes, and ſeveral other plants. The poſſeſſor of this hind ſold ſtags to people in *Philadelphia*, who ſent them as curioſities to other places. He got twenty-five, thirty, and forty ſhillings a-piece for them. The food of the wild ſtags in ſummer is graſs and ſeveral plants; but in winter, when they are not to be got, they eat the ſhoots and young

ſprigs

sprigs of branches. I have already mentioned * that they eat without any danger the spoon-tree, or *Kalmia latifolia*, which is poison to other animals. In the long and severe winter, which commenced here upon the tenth of *December*, 1740, and continued to the thirteenth of *March*, old stile, during the course of which there fell a great quantity of snow, the stags were found dead in the snow, but chiefly higher up the country, where the snow was deeper. Nobody could determine whether their death was the consequence of the great quantity and depth of snow, which hindered their getting out, or whether the frost had been too severe, and of too long duration, or whether they were short of food. The old people likewise relate, that vast numbers of stags came down in the year 1705, when there was a heavy fall of snow, near a yard deep, and that they were afterwards found dead in the woods, in great numbers, because the snow was deeper than they could pass through. Numbers of birds were likewise found dead at that time. In that same winter, a stag came to *Matsong* into the stables, and ate hay together with the cattle. It was so pinched by hunger, that it grew tame immediately, and did not run away

* See vol. i. page 338.

from people. It afterwards continued in the houſe, as another tame creature. All aged perſons aſſerted, that formerly this country abounded more with ſtags than it does at preſent. It was formerly not uncommon to ſee thirty or forty of them in a flock together. The reaſon of their decreaſe is chiefly owing to the increaſe of population, the deſtruction of the woods, and the number of people who kill and frighten the ſtags at preſent. However, high up in the country, in great foreſts and deſarts, there are yet great numbers of them. Among their enemies is the *Lynx* of this country, which is the ſame with the *Swediſh* one *. They climb up the trees, and when the ſtags paſs by, they dart down upon him, get faſt hold, bite, and ſuck the blood, and never give over till they have killed it.

I ſaw ſeveral holes in the ground, both on hills and on fields, and fallow grounds; they were round, and commonly about

* *Warglo*; *Felis Lynx. Linn.* The *Swedes* mention two kinds of lynx, the one is called the *Warglo*, or wolf-lynx, and the other the *Kattlo*, or cat-lynx. The *Germans* make the ſame diſtinction, and call the former *Wolf-luchs*, and the latter *Katz-luchs*: the former is the biggeſt, of a browniſh red, mixed with grey and white, on its back, and white towards the belly, with browniſh ſpots; the latter is ſmaller, and has a coat which is more white, and with more ſpots. F.

about an inch wide; they went almoſt perpendicularly into the earth, and were made by dung-beetles, or by great worms, which are made uſe of for angling. The dung-beetles had dug very deep into the ground, thro' horſe-dung, tho' it lay on the hardeſt road, ſo that a great heap of earth lay near it. Theſe holes were afterwards occupied by other inſects, eſpecially graſshoppers, *(Grylli)* and *Cicadæ*; for by digging theſe holes up, I commonly found one or more young ones of theſe inſects, which had not yet got their perfect ſize.

May the 19th. THIS morning I left *Raccoon*, a pariſh in the country called *New Sweden*, and which is yet chiefly inhabited by *Swedes*, in order to proceed in my travels to the North. I firſt intended to ſet out with the beginning of *April*, but for ſeveral reaſons this was not adviſeable. No leaves were come out at that time, and hardly any flowers appeared. I did not know what flowers grew here in ſpring; for the autumnal plants are different from the vernal ones. The *Swedes* had this winter told me the œconomical and medical uſes of many plants, to which they gave names unknown to me: they could not then ſhew me thoſe plants on account of the ſeaſon, and by their deficient and erroneous de-

ſcriptions, I was not able to gueſs what plants they meant. By going away ſo early as the beginning of *April*, I would have remained in uncertainty in regard to theſe things. It was therefore fit, that I ſhould ſpend a part of the ſpring at *Raccoon*, eſpecially as I had ſtill time enough left for my tour to the North.

On the road we ſaw a *Black Snake*, which we killed, and found juſt five foot long. *Cateſby* has deſcribed it and its qualities, and alſo drawn it *. The full-grown Black Snakes are commonly about five feet long, but very ſlender; the thickeſt I ever ſaw was in the broadeſt part hardly three inches thick; the back is black, ſhining, and ſmooth; the chin white and ſmooth; the belly whitiſh turning into blue, ſhining, and very ſmooth; I believe there are ſome varieties of this ſnake. One which was nineteen inches long, had a hundred and eighty-ſix ſcales on the belly, *(Scuta Abdominalia)* and ninety-two half ſcales on the tail *(Squamæ ſubcaudales)*, which I found to be true, by a repeated counting of the ſcales. Another, which was ſeventeen inches and a half in length, had a hundred and eighty-four ſcales on the belly, and only ſixty-four half ſcales on the tail; this I like-

* *Anguis niger*. See *Cateſby*'s Nat. Hiſt. of Carol. ii. t. 48.

I likewise assured myself of, by counting the scales over again. It is possible that the end of this last snake's tail was cut off, and the wound healed up again †.

The country abounds with Black Snakes. They are among the first that come out in spring, and often appear very early if warm weather happens; but if it grows cold again after that, they are quite frozen, and lie stiff and torpid on the ground or on the ice; when taken in this state and put before a fire, they revive in less than an hour's time. It has sometimes happened, when the beginning of *January* is very warm, that they come out of their winter habitations. They commonly appear about the end of *March*, old style.

This

† It has been found by repeated experience, that the specific character employed by Dr. *Linnæus*, for the distinction of the species of snakes, taken from their *Scuta abdominalia & caudalia*, or their *Squamæ subcaudales*, varies greatly in snakes of the same species, so that often the difference amounts to ten or more: the whole number of the scuta sometimes helps to find out the species; care ought however to be taken, that the snake may not by any accident have lost its tail, and that it be growing again; in which case, it is impossible to make use of this character. The character is not quite so good and decisive, as may be wished, but neither are the marks taken from colours, spots, stripes, &c. quite constant; and so it is better to make use of an imperfect character, than none at all. Time, and greater acquaintance with this class of animals, may perhaps clear up their natural characters. F.

This is the ſwifteſt of all the ſnakes which are to be found here, for it moves ſo quick, that a dog can hardly catch it. It is therefore almoſt impoſſible for a man to eſcape it if purſued: but happily its bite is neither poiſonous nor any way dangerous; many people have been bit by it in the woods, and have ſcarce felt any more inconvenience than if they had been wounded by a knife; the wounded place only remains painful for ſome time. The Black Snakes ſeldom do any harm, except in ſpring, when they copulate; but if any body comes in their way at that time, they are ſo much vexed, as to purſue him as faſt as they can. If they meet with a perſon who is afraid of them, he is in great diſtreſs. I am acquainted with ſeveral people, who have on ſuch an occaſion run ſo hard as to be quite out of breath, in endeavouring to eſcape the ſnake, which moved with the ſwiftneſs of an arrow after them. If a perſon thus purſued can muſter up courage enough to oppoſe the ſnake with a ſtick or any thing elſe, when it is either paſſed by him, or when he ſteps aſide to avoid it, it will turn back again, and ſeek a refuge in its ſwiftneſs. It is, however, ſometimes bold enough to run directly upon a man, and not to depart before

fore it has received a good ſtroke. I have been aſſured by ſeveral, that when it overtakes a perſon, who has tried to eſcape it, and who has not courage enough to oppoſe it, it winds round his feet, ſo as to make him fall down; it then bites him ſeveral times in the leg, or whatever part it can get hold of, and goes off again. I ſhall mention two circumſtances, which confirm what I have ſaid. During my ſtay in *New York*, Dr. *Colden* told me, that in the ſpring, 1748, he had ſeveral workmen at his country ſeat, and among them one lately arrived from *Europe*, who of courſe knew very little of the qualities of the Black Snake. The other workmen ſeeing a great Black Snake copulating with its female, engaged the new comer to go and kill it, which he intended to do with a little ſtick. But on approaching the place where the ſnakes lay, they perceived him, and the male in great wrath leaves his pleaſure to purſue the fellow with amaſing ſwiftneſs; he little expected ſuch courage in the ſnake, and flinging away his ſtick, began to run as faſt as he was able. The ſnake purſued him, overtook him, and twiſting ſeveral times round his feet, threw him down, and frightened him almoſt out of his ſenſes; he could not get rid of the ſnake, till he took

took a knife and cut it through in two or three places. The other workmen were rejoiced at this fight, and laughed at it, without offering to help their companion. Many people at *Albany* told me of an accident which happened to a young lady, who went out of town in ſummer, together with many other girls, attended by her negro. She ſat down in the wood, in a place where the others were running about, and before ſhe was aware, a Black Snake being diſturbed in its amours, ran under her petticoats, and twiſted round her waiſt, ſo that ſhe fell backwards in a ſwoon occaſioned by her fright, or by the compreſſion which the ſnake cauſed. The negro came up to her, and ſuſpecting that a Black Snake might have hurt her, on making uſe of a remedy to bring his lady to herſelf again, he lifted up her cloaths, and really found the ſnake wound about her body as cloſe as poſſible; the negro was not able to tear it away, and therefore cut it, and the girl came to herſelf again; but ſhe conceived ſo great an averſion to the negro, that ſhe could not bear the ſight of him afterwards, and died of a conſumption. At other times of the year this ſnake is more apt to run away, than to attack people. However I have heard it aſſerted frequently, that even in ſummer

when its time of copulation is past, it pursues people, especially children, if it finds that they are afraid and run from her. Several people likewise assured me from their own experience, that it may be provoked to pursue people, if they throw at it, and then run away. I cannot well doubt of this, as I have heard it said by numbers of creditable people; but I could never succeed in provoking them. I ran always away on perceiving it, or flung something at it, and then took to my heels, but I could never bring the snakes to pursue me: I know not for what reason they shunned me, unless they took me for an artful seducer.

Most of the people in this country ascribed to this snake a power of fascinating birds and squirrels, as I have described in several parts of my Journal *. When the snake lies under a tree, and has fixed his eyes on a bird or squirrel above; it obliges them to come down, and to go directly into its mouth. I cannot account for this, for I never saw it done. However, I have a list of more than twenty persons, among which are some of the most creditable people, who have all unanimously, though living

* See vol. i. p. 319.

living far distant from each other, asserted the same thing; they assured me upon their honor, that they have seen (at several times) these Black Snakes fascinating squirrels and birds which sat on the tops of trees, the snake lying at the foot of the tree, with its eyes fixed upon the bird or squirrel, which sits above it, and utters a doleful note; from which it is easy to conclude with certainty that it is about to be fascinated, though you cannot see it. The bird or squirrel runs up and down along the tree continuing its plaintive song, and always comes nearer the snake, whose eyes are unalterably fixed upon it. It should seem as if these poor creatures endeavoured to escape the snake, by hopping or running up the tree; but there appears to be a power which withholds them: they are forced downwards, and each time that they turn back, they approach nearer their enemy, till they are at last forced to leap into its mouth, which stands wide open for that purpose. Numbers of squirrels and birds are continually running and hopping fearless in the woods on the ground, where the snakes ly in wait for them, and can easily give these poor creatures a mortal bite. Therefore it seems that this fascination might be thus interpreted, that the creature

creature has first got a mortal wound from the snake, which is sure of her bite, and lies quiet, being assured that the wounded creature has been poisoned with the bite, or at least feels pain from the violence of the bite, and that it will at last be obliged to come down into its mouth. The plaintive note is perhaps occasioned by the acuteness of the pain which the wound gives the creature. But to this it may be objected, that the bite of the Black Snake is not poisonous; it may further be objected, that if the snake could come near enough to a bird or squirrel to give it a mortal bite, it might as easily keep hold of it, or, as it sometimes does with poultry, twist round and strangle or stifle it. But the chief objection which lies against this interpretation, is the following account, which I received from the most creditable people, who have assured me of it. The squirrel being upon the point of running into the snake's mouth, the spectators have not been able to let it come to that pitch, but killed the snake, and as soon as it had got a mortal blow, the squirrel or bird destined for destruction, flew away, and left off their moanful note, as if they had broke loose from a net. Some say, that if they only touched the snake, so as to draw off

its attention from the ſquirrel, it went off quickly, not ſtopping till it had got to a great diſtance. Why do the ſquirrels or birds go away ſo ſuddenly, and why no ſooner? If they had been poiſoned or bitten by the ſnake before, ſo as not to be able to get from the tree, and to be forced to approach the ſnake always more and more, they could however not get new ſtrength by the ſnake being killed or diverted. Therefore, it ſeems that they are only *enchanted*, whilſt the ſnake has its eyes fixed on them. However, this looks odd and unaccountable, though many of the worthieſt and moſt reputable people have related it, and though it is ſo univerſally believed here, that to doubt it would be to expoſe one's ſelf to general laughter.

The black ſnakes kill the ſmaller ſpecies of frogs, and eat them. If they get at eggs of poultry, or of other birds, they make holes in them, and ſuck the contents. When the hens are ſitting on the eggs, they creep into the neſt, wind round the birds, ſtifle them, and ſuck the eggs. Mr. *Bartram* aſſerted, that he had often ſeen this ſnake creep up into the talleſt trees, after bird's eggs, or young birds, always with the head foremoſt, when deſcending. A *Swede* told me, that a black

snake had once got the head of one of his hens in its mouth, and was wound several times round the body, when he came and killed the snake. The hen was afterwards as well as ever.

This snake is very greedy of milk, and it is difficult to keep it out, when it is once used to go into a cellar where milk is kept. It has been seen eating milk out of the same dish with children, without biting them, though they often gave it blows with the spoon upon the head, when it was overgreedy. I never heard it hissing. It can raise more than one half of its body from the ground, in order to look about her. It skins every year; and its skin is said to be a remedy against the cramp, if continually worn about the body.

The rye was now beginning to flower.

I have often observed with astonishment, on my travels, the great difference between the plants and the soil, on the two opposite banks of brooks. Sometimes a brook, which one can stride over, has plants on one bank widely different from those on the opposite bank. Therefore, whenever I came to a great brook or a river, I expected to find plants which I had not met with before. Their seeds are carried down

with the ſtream from diſtant parts. The ſoil is likewiſe very often different on the different ſides of a rivulet, being rich and fertile on the one, and dry, barren, and ſandy on the other. But a great river can make ſtill greater differences. Thus we ſee the great diſparity between the province of *Penſylvania*, and *New Jerſey*, which are only divided by the river *Delaware*. In *Penſylvania* the ſoil conſiſts of a mould mixed with ſand and clay, and is very rich and fertile: and in the woods which are higher in the country, the ground is mountainous and ſtony. On the other hand, in the province of *New Jerſey*, the ſoil is poor and dry, and not very fertile, ſome parts excepted. You can hardly find a ſtone in *New Jerſey*, and much leſs mountains. In *Penſylvania* you ſcarce ever ſee a fir-tree, and in *New Jerſey* are whole woods of it.

This evening I arrived at *Philadelphia*.

May the 22d. The locuſts began to creep out of their holes in the ground laſt night, and continued to do ſo to-day. As ſoon as their wings were dry, they began their ſong, which is almoſt ſufficient to make one deaf, when travelling through the woods. This year there was an immenſe number of them. I have given a minute

minute account of them, of their food, qualities, &c. in the *Memoirs of the Swediſh Royal Academy of Sciences* *; it is therefore needleſs to repeat it here, and I refer the reader to the quoted place.

May the 25th. The tulip-tree *(Liriodendron tulipifera)* was now in full bloſſom. The flowers have a reſemblance to tulips, and look very fine, and though they have not a very agreeable ſmell, yet the eye is pleaſed to ſee trees as tall as full-grown oaks, covered with tulip-like flowers.

On the flowers of the tulip-tree was an olive-coloured *Chafer (Scarabæus)* without horns *(muticus)*, the future and borders of his wing-ſhells *(Elytræ)* were black, and his thighs brown. I cannot with certainty ſay whether they collected the pollen of the flower, or whether they coupled. Later in ſummer, I ſaw the ſame kind of beetles make deep holes into the ripe mulberries, either to eat them, or to lay their eggs in them. I likewiſe found them abundant in the leaves of the *Magnolia glauca*, or beaver-tree.

The ſtraw-berries were now ripe on the hills.

* See the volume for the year 1756, page 10, of the *Swediſh* edition.

THE country people already brought ripe cherries up to town; but they were only a few to ſatisfy curioſity, yet we may form a judgment of the climate from hence.

May the 26th. A peculiar kind of ſtorm called a *Travat*, or *Travado*, happened to-day. In the evening about ten o'clock, when the ſky was quite clear, a thick, black cloud came ruſhing from the ſouth-weſt, with a wind. The air was quite calm, and we could not feel any breeze. But the approach of this cloud was perceived from the ſtrong ruſhing noiſe in the woods to the ſouth-weſt, and which encreaſed in proportion as the cloud came nearer. As ſoon as it was come up to us, it was attended by a violent guſt of wind, which in its courſe threw down the weaker encloſures, carried them a good way along with it, and broke down ſeveral trees. It was then followed by a hard ſhower of rain, which put an end to the ſtorm, and every thing was calm as before. Theſe travadoes are frequent in ſummer, and have the quality of cooling the air. However, they often do a deal of damage. They are commonly attended by thunder and lightning; as ſoon as they are paſſed over, the ſky is as clear as it was before.

May the 28th. THE *Magnolia glauca* was

was now in full bloom. Its flowers have a very pleaſant fragrancy, which refreſhes the travellers in the woods, eſpecially towards the evening. The flowers of the wild vine afterwards ſupplied the place of thoſe of the Magnolia. Several other flowers contribute likewiſe towards perfuming the ambient air.

The *Kalmia anguſtifolia* was now every where in flower. It grows chiefly on ſandy heaths, or on dry poor grounds, which few other plants will agree with; it is common in *Penſylvania*, but particularly in *New Jerſey*, and the province of *New York*, it is ſcarce in *Canada*; its leaves ſtay the winter; the flowers are a real ornament to the woods; they grow in bunches like crowns, and are of a fine lively purple colour; at the bottom is a circle of deep purple, and within it a greyiſh or whitiſh colour. The flowers grow as aforeſaid, in bunches, round the extremity of the ſtalk, and make it look like a decorated pyramid. The *Engliſh* at *New York* call this plant the *Dwarf Laurel*. Its qualities are the ſame with thoſe of the *Kalmia latifolia*, viz. that it kills ſheep and other leſſer animals, when they eat plentifully of it. I do not know whether it is noxious to the greater cattle. It is not of

any known uſe, and only ſerves to attract the eye whilſt in flower.

The *Kalmia latifolia* was likewiſe in full bloſſom at preſent. It rivals the preceding one, in the beauty of its colour; yet though they are conſpicuous in regard to the colours and ſhape of their flowers, they are no ways remarkable for ſmell, ſuch as the *Magnolia* is; for they have little or no ſmell at all. So equally and juſtly does nature diſtribute her gifts; no part of the creation has them all, each has its own, and none is abſolutely without a ſhare of them.

May the 30th. The *Moravian Brethren*, who arrived in great numbers from *Europe*, at *New York*, in *May*, brought two converted *Greenlanders* with them. The *Moravians* who were already ſettled in *America*, immediately ſent ſome of their brethren from *Philadelphia* to the new comers, in order to welcome them. Among theſe deputies were two *North American Indians*, who had been converted to their doctrine, and likewiſe two *South American Indians*, from *Surinam*. Theſe three kinds of converted *Indians* accordingly met at *New York*. I had no opportunity of ſeeing them; but all thoſe who had ſeen them, and whom I converſed with, thought that they

they had plainly perceived a ſimilarity in their features and ſhape, the *Greenlanders* being only ſomewhat ſmaller. They concluded from hence, that all theſe three kinds of *Americans* were the poſterity of one and the ſame deſcendant of *Noah*, or that they were perhaps yet more nearly related. How far their gueſſes are to be relied upon, I cannot determine.

RIPE cherries were now already pretty common, and conſequently cheap.

YAMS are a ſpecies of roots, which are cultivated in the hotteſt parts of *America*, for eating, as we do potatoes. It has not yet been attempted to plant them here, and they are brought from the *Weſt Indies* in ſhips; therefore they are reckoned a rarity here, and as ſuch I ate them at Dr. *Franklin*'s to-day. They are white, and taſte like common potatoes, but not quite ſo agreeable; and I think it would not be worth while to plant them in *Sweden*, though they might bear the climate. The plant theſe roots belong to is the *Dioſcorea alata*.

THE inhabitants make plenty of cheeſe. They are not reckoned ſo good as *Engliſh* cheeſe: however, ſome take them to be full as good when old; and ſo they ſeemed to me. A man from *Boſton* in *New-England* told me, that they made very good cheeſe

cheeſe there: but they take care to keep the cattle from ſalt water, eſpecially thoſe who live near the ſea-coaſts; for it has been found, that the cheeſe will not become ſo good when the cows graze near ſalt water, as it will when they have freſh water. This, however, wants nearer examination, in my opinion.

May the 31ſt. About noon I left *Philadelphia*, and went on board a ſmall yacht, which ſails continually up and down upon the river *Delaware*, between *Trenton* and *Philadelphia*. We ſailed up the river with fair wind and weather. *Sturgeons* leaped often a fathom into the air. We ſaw them continuing this exerciſe all day, till we came to *Trenton*. The banks on the *Penſylvanian* ſide were low; and thoſe on the *New Jerſey* ſide ſteep and ſandy, but not very high. On both ſides we perceived foreſts of tall trees, with *deciduous* leaves.

During the courſe of this month, the forenoon was always calm; but immediately after noon it began to blow gently, and ſometimes pretty ſtrongly. This morning was likewiſe fair; and in the afternoon it was cloudy, but did not rain.

The banks of the river were ſometimes high, and ſometimes low. We ſaw ſome ſmall houſes near the ſhore, in the woods; and,

and, now and then, a good houſe built of ſtone. The river now decreaſed viſibly in breadth. About three o'clock this afternoon we paſſed *Burlington*.

BURLINGTON, the chief town in the province of *New Jerſey*, and the reſidence of the governor, is but a ſmall town, about twenty miles from *Philadelphia*, on the eaſtern ſide of the *Delaware*. The houſes were chiefly built of ſtone, though they ſtood far diſtant from each other. The town has a good ſituation, ſince ſhips of conſiderable burden can ſail cloſe up to it: but *Philadelphia* prevents its carrying on an extenſive trade; for the proprietors of that place * have granted it great immunities, by which it is increaſed ſo as to ſwallow all the trade of the adjacent towns. The houſe of the governor at *Burlington* is but a ſmall one: it is built of ſtone, cloſe by the river ſide, and is the firſt building in the town as you come from *Philadelphia*. It is obſerved, that about the full moons, when the tides are higheſt, and the high water at *Cape Hinlopen* comes at nine o'clock in the morning, it will be at *Cheſter*, on the river *Delaware*, about ten minutes after one o'clock; at *Philadelphia*, about ten minutes after two o'clock; and at *Burlington*,

* *William Penn*, Eſq; and his heirs after him.

ton, about ten minutes after three o'clock; for the tide in the river *Delaware* comes quite up to *Trenton*. Theſe obſervations were communicated to me by Mr. *Lewis Evans*.

THE banks of the river were now chiefly high and ſteep on the ſide of *New Jerſey*, conſiſting of a pale brick-coloured ſoil. On the *Penſylvanian* ſide, they were gently ſloping, and conſiſted of a blackiſh rich mould, mixed with particles of Glimmer *(Mica)*. On the *New Jerſey* ſide appeared ſome firs; but ſeldom on the other, except in a few places where they were accidentally brought over from *New Jerſey*.

TOWARDS night, after the tide had begun to ebb and the wind was quite ſubſided, we could not proceed, but dropped our anchor about ſeven miles from *Trenton*, and paſſed the night there. The woods were full of *Fireflies*, *(Lampyris)* which flew like ſparks of fire between the trees, and ſometimes acroſs the river. In the marſhes, the *Bullfrogs* now and then began their hideous roaring; and more than a hundred of them roared together. The *Whip-poor-will*, or *Goatſucker*, was likewiſe heard every where.

June the 1ſt. WE continued our voyage this morning, after the rain was over. The river

river *Delaware* was very narrow here, and the banks the same as we found them yesterday, after we had passed *Burlington*. About eight o'clock in the morning we arrived at *Trenton**.

June the 2d. This morning we left *Trenton*, and proceeded towards *New York*. The country I have described before †. The fields were sown with wheat, rye, maize, oats, hemp, and flax. In several places, we saw very large pieces of ground with hemp.

We saw abundance of chesnut-trees in the woods. They often stood in excessive poor ground, which was neither too dry nor too wet.

Tulip-trees did not appear on the road; but the people said there were some in the woods.

The *Beaver-tree (Magnolia glauca)* grows in the swamps. It was now in flower, and the fragrancy of its blossoms had so perfumed the air, that one could enjoy it before one approached the swamps; and this fine smell likewise shewed that a beaver-tree was near us, though we often happened not to see it.

The

*See Vol. I. p. 220. † Ibid, p. 224—237.

The *Phlox Glaberrima* grows abundantly in the woods, and cuts a fine figure with its red flowers. It grows in ſuch ſoil here as in *Europe* is occupied by the *Lychnis viſcaria* and *Lychnis dioica*, or red Catchfly and Campion. The *Phlox maculata* grows abundantly in wet ground, and has fine red and odoriferous flowers. It grows on low meadows, where in *Europe* the Meadow-pinks, or *Lychnis flos cuculi*, would be met with. By adding to theſe flowers the *Bartſia coccinea*, the *Lobelia cardinalis*, and the *Monarda didyma*, which grow wild in this country, they are undoubtedly altogether adorned with the fineſt red imaginable.

The *Saſſafras-tree* was abundant in the woods, and near the incloſures.

The houſes which we paſſed by were moſt of them wooden. In one place, I ſaw the people building a houſe with walls of mere clay, which is likewiſe employed in making ovens for baking.

Buckwheat was already coming up in ſeveral places. We ſaw ſingle plants of it all day in the woods, and in the fields, but always by the ſide of the road; from whence it may be concluded, that they ſpring up from loſt and ſcattered ſeeds.

Late

LATE this evening we arrived at *New Brunſwick* *.

June the 3d. At noon we went on board a yacht bound for *New York*, and ſailed down the river, which had at firſt pretty high and ſteep banks, of red ſand-ſtone, on each ſide, which I have mentioned before. Now and then, there was a farm-houſe on the high ſhore. As we came lower down, we ſaw on both ſides great fields and meadows, cloſe up to the water. We could not ſail at random with the yacht; for the river was often ſhallow in ſome places, and ſometimes in the very middle. For that purpoſe, the courſe which we were to take was marked out by branches with leaves on them. At laſt we got into the ſea, which bounded our proſpect on the ſouth; but on the other ſide, we were continually in ſight of land at ſome diſtance. On coming to the mouth of the river, we had a choice of two roads to *New York*; *viz.* either within the *Staten Iſland*, or without it. The inhabitants are determined in their choice by the weather; for when it is is ſtormy and cloudy, or dark, they do not venture to ſail without, where the ſea itſelf communicates. We took that courſe now,

* See an account of that place in Vol. I. p. 228.

† See Vol. I. p. 230.

now, it being very pleaſant weather; and though we ſtruck on the ſands once or twice, yet we got looſe again, and arrived at *New York* about nine o'clock. Of this town I have given an account in the preceding volume *.

June the 4th. I FOUND vines in ſeveral gardens, got from the old countries. They bear annually a quantity of excellent grapes. When the winters are very ſevere, they are killed by the froſt, and die quite to the ground; but the next ſpring new ſhoots ſpring up from the root.

STRAWBERRIES were now ſold in abundance about the town every day. An *Engliſhman* from *Jamaica* aſſerted, that in that iſland there were no ſtrawberries. The ſnakes are very fond of ſtrawberries. Thoſe which they had here were not ſo good as the *Swediſh* and *Finland* ones.

RED CLOVER was ſown in ſeveral places on the hills without the town. The country people were now employed in mowing the meadows. Some were already mown; and the dry clover was put under cover, in order to be carried away the firſt opportunity.

CHERRY-TREES were planted in great quantities before the farm-houſes, and along the

* See Vol. I. p. 247, &c.

the high-roads, from *Philadelphia* to *New Brunſwick*; but behind that place they became more ſcarce. On coming to *Staten Iſland*, in the province of *New York*, I found them very common again, near the gardens. Here are not ſo many varieties of cherries as there are in *Penſylvania*. I ſeldom ſaw any of the black ſweet cherries * at *New York*; but commonly the four red ones. All travellers are allowed to pluck ripe fruit in any garden which they paſs by; and not even the moſt covetous farmer can hinder them from ſo doing. Between *New Brunſwick* and *Staten Iſland*, are a few cherry-gardens; but proportionably more orchards, with apple-trees.

June the 6th. SEVERAL gentlemen and merchants, between fifty and ſixty years of age, aſſerted, that during their life they had plainly found ſeveral kinds of fiſh decreaſe in number every year; and that they could not get near ſo many fiſh now as they could formerly.

RUM, a brandy prepared from the ſugar-canes, and in great uſe with all the *Engliſh North American* colonies, is reckoned much wholeſomer than brandy, made from wine or corn †. In confirmation of this opinion,

* Commonly called *Black-heart Cherries*.

† That rum is among the ſpirituous liquors leſs noxious than any one of the reſt, is chiefly owing to the balſamic

opinion, they ſay, that if you put a piece of freſh meat into rum, and another into brandy, and leave them there for ſome months; that in the rum will keep as it was, but that in the brandy will be quite eaten, and full of holes. But this experiment does not ſeem a very accurate one to me. Major *Roderfort* told me, that being upon the *Canada* expedition, he had obſerved, that ſuch of his men as drank brandy for ſome time died of it; but thoſe who drank rum were not hurt, though they got drunk with it every day, and oftener than the others.

LONG-ISLAND is the name of an iſland oppoſite the town of *New York*, in the ſea. The northern part of the iſland is much more fertile than the ſouthern. Formerly there lived a number of *Indians* on this iſland; and there are yet ſome, which however decreaſe in number every year, becauſe they leave the iſland. The ſoil of the ſouthern part of the iſland is very poor; but

quality it gets from the ſugar, which corrects the ſtyptic quality all kinds of brandy and ſpirituous liquors have. The older the rum is, and the longer it has been kept in a great caſk, the more is its ſtypticity corrected. All which has been lately proved by the cleareſt experiments, explained and deducted from the moſt indiſputable principles of chymiſtry, in a pamphlet written by that able chymiſt Mr. *Doſſie*. F.

but this deficiency is made up by a vaſt quantity of oyſters, lobſters, crabs, ſeveral kinds of fiſh, and numbers of water fowl, all which are there far more abundant than on the northern ſhores of the Iſland. Therefore the *Indians* formerly choſe the ſouthern part to live in, becauſe they ſubſiſted on oyſters, and other productions of the ſea. When the tide is out, it is very eaſy to fill a whole cart with oyſters, which have been driven on ſhore by one flood. The Iſland is ſtrewed with oyſter-ſhells and other ſhells, which the *Indians* left there; theſe ſhells ſerve now for good manure for the fields. The ſouthern part of the Iſland is turned into meadows, and the northern part into fields. The winter is more conſtant on the northern part, and the ſnow in ſpring lies longer there than on the ſouthern part. The people are very fertile here, and commonly tall and ſtrong.

June the 10th. At noon we left *New York*, and ſailed up the river *Hudſon*, in a yacht bound for *Albany*. All this afternoon we ſaw a whole fleet of little boats returning from *New York*, whither they had brought proviſions and other goods for ſale, which on account of the extenſive commerce of this town, and the great number of its inhabitants, go off very well. The

river *Hudſon* runs from North to South here, except ſome high pieces of land which ſometimes project far into it, and alter its direction; its breadth at the mouth is reckoned about a mile and a quarter. Some porpeſſes played and tumbled in the river. The eaſtern ſhore, or the *New York* ſide, was at firſt very ſteep and high; but the weſtern was very ſloping and covered with woods. There appeared farm-houſes on both ſides, ſurrounded with corn-fields. The ground of which the ſteep ſhores conſiſted was of a pale brick colour, and ſome little rocks of a grey ſand-ſtone were ſeen here and there. About ten or twelve miles from *New York*, the weſtern ſhore appears quite different from what it was before; it conſiſts of ſteep mountains with perpendicular ſides towards the river, and they are exactly like the ſteep ſides of the mountains of *Hall* and *Hunnebarg* in *Weſt Gothland*. Sometimes a rock projects like the ſalliant angle of a baſtion: the tops of theſe mountains are covered with oaks, and other wood; a number of ſtones of all ſizes lay along the ſhore, having rolled down from the mountains.

THESE high and ſteep mountains continue for ſome *Engliſh* miles on the weſtern ſhore; but on the eaſtern ſide the land is high,

high, and ſometimes diverſified with hills and valleys, which are commonly covered with deciduous trees, amongſt which there appears a farm now and then in a glade. The hills are covered with ſtones in ſome places. About twelve miles from *New York* we ſaw *Sturgeons* (Acipenſer ſturio)*, leaping up out of the water, and on the whole paſſage we met with porpeſſes in the river. As we proceeded we found the eaſtern banks of the river very much cultivated; and a number of pretty farms ſurrounded with orchards and fine corn-fields, preſented themſelves to our view. About twenty-two miles from *New York*, the high mountains which I have before mentioned left us, and made as it were a high ridge here from eaſt to weſt quite acroſs the country. This altered the face of the country on the weſtern ſhore of the river: from mountainous, it became interſperſed with little vallies and round hillocks, which were ſcarce inhabited at all; but the eaſtern ſhore continued to afford us a delightful proſpect. After ſailing a little while in the night, we caſt our anchor and lay here

* The *New-York* Sturgeons which I ſaw this year brought over, had ſhort blunt noſes, in which particular they are different from the *Engliſh* ones, which have long noſes. F.

till the morning, eſpecially as the tide was ebbing with great force.

June the 11th. THIS morning we continued our voyage up the river, with the tide and a faint breeze. We now paſſed the *Highland* mountains, which were to the Eaſt of us; they conſiſt of a grey ſandſtone, are very high and pretty ſteep, and covered with deciduous trees, and likewiſe with firs and red cedars. The weſtern ſhore was full of rocks, which however did not come up to the height of the mountains on the oppoſite ſhore; the tops of theſe eaſtern mountains were cut off from our ſight by a thick fog which ſurrounded them. The country was unfit for cultivation, being ſo full of rocks, and accordingly we ſaw no farms. The diſtance from theſe mountains to *New York* is computed at thirty-ſix *Engliſh* miles.

A thick fog now roſe up from the high mountains. For the ſpace of ſome *Engliſh* miles, we had hills and rocks on the weſtern banks of the river; and a change of leſſer and greater mountains and vallies covered with young firs, red cedars, and oaks, on the eaſtern ſide. The hills cloſe to the river ſide are commonly low, but their height increaſes as they are further from the river. Afterwards we ſaw, for ſome miles together,

together, nothing but high round mountains and valleys, both covered with woods; the valleys are in reality nothing but low rocks, and ſtand perpendicular towards the river in many places. The breadth of the river is ſometimes two or three muſket ſhot, but commonly not above one; every now and then we ſaw ſeveral kinds of fiſh leaping out of the water. The wind vaniſhed away about ten o'clock in the morning, and forced us to get forwards with our oars, the tide being almoſt ſpent. In one place on the weſtern ſhore we ſaw a wooden houſe painted red, and we were told, that there was a ſaw-mill further up; but beſides this we did not perceive one farm or any cultivated grounds all this forenoon.

THE water in the river has here no more a brackiſh taſte; yet I was told that the tide, eſpecially when the wind is South, ſometimes carries the ſalt water up higher with it. The colour of the water was likewiſe altered, for it appeared darker here than before. To account for the firſt origin of rivers is very difficult, if not wholly impoſſible; ſome rivers may have come from a great reſervoir of water, which being conſiderably encreaſed by heavy falls of rain or other circumſtances, paſſed its old bounds and flowed to the lower coun-

tries, through the places where it met with the leaſt oppoſition. This is perhaps the reaſon why ſome rivers run in ſo many bendings equally through fields of ſoft earth, as likewiſe there, where mountains, rocks, and ſtones, divert their paſſage. However it ſeems that ſome rivers derive their firſt origin from the creation itſelf, and that Providence then pointed out their courſe; for their exiſtence can, in all probability, not be owing to the accidental eruption of water alone. Among theſe rivers we may rank the river *Hudſon:* I was ſurpriſed on ſeeing its courſe, and the variety of its ſhores. It takes its riſe a good way above *Albany*, and deſcends to *New York*, in a direct line from North to South, which is a diſtance of about a hundred and ſixty *Engliſh* miles, and perhaps more; for the little bendings which it makes are of no ſignification. In many places between *New York* and *Albany*, are ridges of high mountains running Weſt and Eaſt. But it is remarkable that they go on undiſturbed till they come to the river *Hudſon*, which cuts directly acroſs them, and frequently their ſides ſtand perpendicular towards the river. There is an opening left in the chain of mountains, as broad as the river commonly is, for it to paſs through, and the mountains go on as before,

before, on the other ſide, in the ſame direction. It is likewiſe remarkable, that the river in ſuch places where it paſſes through the mountains is as deep, and often deeper than in the other places. The perpendicular rocks on the ſides of the river are ſurpriſing, and it appears that if no paſſages had been opened by Providence, for the river to paſs through, the mountains in the upper part of the country would have been inundated, ſince theſe mountains, like ſo many dykes, would have hindered the water from going on. *Quere*, Why does this river go on in a direct line for ſo conſiderable a diſtance? Why do the many paſſages, through which the river flows acroſs the mountains, ly under the ſame meridian? Why are waterfalls near ſome of theſe paſſages, or at leaſt ſhallow water with a rocky ground?

We now perceived exceſſive high and ſteep mountains on both ſides of the river, which echoed back each ſound we uttered. Yet notwithſtanding they were ſo high and ſteep, they were covered with ſmall trees.

The *Blue Mountains*, which reared their towering tops above all the other mountains, were now ſeen before us, towards *North*, but at a great diſtance.

The country began here to look more cultivated, and leſs mountainous.

The

THE laſt of the high weſtern mountains is called *Butterhill*, after which the country between the mountains grows more ſpacious. The farms became very numerous, and we had a proſpect of many corn-fields, between the hills: before we paſſed theſe hills we had the wind in our face, and we could only get forward by tacking, which went very ſlow, as the river was hardly a muſket-ſhot in breadth. Afterwards we caſt anchor, becauſe we had both wind and tide againſt us.

WHILST we waited for the return of tide and the change of wind, we went on ſhore.

THE *Saſſafras-tree (Laurus Saſſafras)* and the cheſnut-tree grows here in great abundance. I found the tulip-tree *(Liriodendron tulipifera)* in ſome parts of the wood, as likewiſe the *Kalmia latifolia*, which was now in full bloſſom; though the flowers were already withering.

SOME time after noon the wind aroſe from South-weſt, which being a fair wind, we weighed anchor, and continued our voyage. The place where we lay at anchor, was juſt the end of thoſe ſteep and amazing high mountains: their height is very amazing; they conſiſt of grey rock ſtone, and cloſe to them, on the ſhore, lay a vaſt

number of little ſtones. As ſoon as we had paſſed theſe mountains, the country became clearer of mountains, and higher. The river likewiſe encreaſed in breadth, ſo as to be near an *Engliſh* mile broad. After ſailing for ſome time, we found no more mountains along the river; but on the eaſtern ſide goes a high chain of mountains to the north-eaſt, whoſe ſides are covered with woods, up to one half of their height. The ſummits however are quite barren; for I ſuppoſe that nothing would grow there, on account of the great degree of heat *, dryneſs, and the violence of the wind, to which that part is expoſed. The eaſtern ſide of the river is much more cultivated than the weſtern, where we ſeldom ſaw a houſe, the land being covered with woods, though it is in general very level. About fifty-ſix *Engliſh* miles from *New York* the country is not very high; yet it is every where covered with woods, except ſome new farms which were ſcattered here and there. The high mountains

* Mr. *Kalm* was certainly miſtaken, by thinking the ſummits of theſe mountains without wood, *on account of the great degree of heat:* for it is a general notion, founded on experience, that the ſun operates not ſo much on the tops of mountains, as in plains or vallies, and the cold often hinders the increaſe of wood on the ſummits of high mountains. F.

tains which we left in the afternoon, now appeared above the woods and the country. Theſe mountains, which were called the *Highlands*, did not project more North than the other, in the place where we anchored. Their ſides (not thoſe towards the river) were ſeldom perpendicular, but ſloping, ſo that one could climb up to the top, though not without difficulty.

On ſeveral high grounds near the river, the people burnt lime. The maſter of the yacht told me, that they break a fine blueiſh grey limeſtone in the high grounds, along both ſides of the river, for the ſpace of ſome *Engliſh* miles, and burn lime of it. But at ſome miles diſtance there is no more limeſtone, and they find alſo none on the banks till they come to *Albany*.

We paſſed by a little neck of land, which projected on the weſtern ſide in the river, and was called *Dance*. The name of this place is ſaid to derive its origin from a feſtival which the *Dutch* celebrated here in former times, and at which they danced and diverted themſelves; but once there came a number of *Indians*, who killed them all.

We caſt anchor late at night, becauſe the wind ceaſed and the tide was ebbing. The depth of the river is twelve fathoms here.

The

THE fire-flies paſſed the river in numbers, at night, and ſometimes ſettled upon the rigging.

June the 12th. THIS morning we proceeded with the tide, bnt againſt the wind. The river was here a muſket-ſhot broad. The country in general is low on both ſides, conſiſting of low rocks, and ſtony fields, which are however covered with woods. It is ſo rocky, ſtony, and poor, that nobody can ſettle in it, or inhabit it, there being no ſpot of ground fit for a corn-field. The country continued to have the ſame appearance for the ſpace of ſome miles, and we never perceived one ſettlement. At eleven o'clock this morning we came to a little iſland, which lies in the middle of the river, and is ſaid to be half-way between *New York* and *Albany*. The ſhores are ſtill low, ſtony, and rocky, as before. But at a greater diſtance we ſaw high mountains, covered with woods, chiefly on the weſtern ſhore, raiſing their tops above the reſt of the country: and ſtill further off, the *Blue Mountains* roſe up above them. Towards noon it was quite calm, and we went on very ſlow. Here, the land is well cultivated, eſpecially on the eaſtern ſhore, and full of great corn-fields; yet the ſoil ſeemed ſandy.

Several

Several villages lay on the eaſtern ſide, and one of them, called *Straſburg*, was inhabited by a number of *Germans*. To the Weſt we ſaw ſeveral cultivated places. The *Blue Mountains* are very plainly to be ſeen here. They appear through the clouds, and tower above all other mountains. The river is full an *Engliſh* mile broad oppoſite *Straſburg*.

THEY make uſe of a yellow *Agaricus*, or muſhroom, which grows on maple-trees, for tinder; that which is found on the red-flowering maple *(Acer rubrum)* is reckoned the beſt, and next in goodneſs is that of the *Sugar-maple (Acer ſaccarinum)*, which is ſometimes reckoned as good as the former.

RHINBECK is a place at ſome diſtance from *Straſburgh*, further off from the river. It is inhabited by many *Germans*, who have a church there. Their clergyman at preſent was the Rev. Mr. *Hartwig*, who knew ſome *Swediſh*, having been at *Gothenburg* for ſome time. This little town is not viſible from the river-ſide.

AT two in the afternoon it began again to blow from the ſouth, which enabled us to proceed. The country on the eaſtern ſide is high, and conſiſts of a well cultivated ſoil. We had fine corn-fields, pret-

ty

ty farms, and good orchards, in view. The weſtern ſhore is likewiſe ſomewhat high, but ſtill covered with woods, and we now and then, though ſeldom, ſaw one or two little ſettlements. The river is above an *Engliſh* mile broad in moſt places, and comes in a ſtrait line from the North, ſo that we could not ſometimes follow it with our eye.

June the 13th. THE wind favoured our voyage during the whole night, ſo that I had no opportunity of obſerving the nature of the country. This morning at five o'clock we were but nine *Engliſh* miles from *Albany*. The country on both ſides the river is low, and covered with woods, excepting a few little ſcattered ſettlements. Under the higher ſhores of the river are wet meadows, covered with ſword-graſs *(Carex)*, and they formed ſeveral little iſlands. We ſaw no mountains; and haſtened towards *Albany*. The land on both ſides of the river is chiefly low, and more carefully cultivated as we came nearer to *Albany*.

As to the houſes, which we ſaw, ſome were of wood, others of ſtone. The river is ſeldom above a muſket-ſhot broad, and in ſeveral parts of it are ſands, which require great experience for governing the yachts.

yachts. At eight o'clock in the morning we arrived at *Albany*.

ALL the yachts which ply between *Albany* and *New York*, belong to *Albany*. They go up and down the river *Hudſon*, as long as it is open and free from ice. They bring from *Albany* boards or planks, and all ſorts of timber, flour, peaſe, and furs, which they get from the *Indians*, or which are ſmuggled from the *French*. They come home almoſt empty, and only bring a few merchandizes with them, among which rum is the chief. This laſt is abſolutely neceſſary to the inhabitants of *Albany*; they cheat the *Indians* in the fur trade with it; for when the *Indians* are drunk, they will leave it to the *Albanians* to fix the price of the furs. The yachts are pretty large, and have a good cabbin, in which the paſſengers can be very commodiouſly lodged. They are commonly built of *red Cedar*, or of *white Oak*. Frequently, the bottom conſiſts of white oak, and the ſides of red cedar, becauſe the latter withſtands putrefaction much longer than the former. The red cedar is likewiſe apt to ſplit, when it hits againſt any thing, and the river *Hudſon* is in many parts full of ſands and rocks, againſt which the keel of the yacht ſometimes hits; therefore they

they chooſe white oak for the bottom, as being the ſofter wood, and not ſplitting ſo eaſily: and the bottom being continually under water, is not ſo much expoſed to putrefaction, and holds out longer.

THE *Canoes* which the yachts have along with them, are made of a ſingle piece of wood, hollowed out; they are ſharp on both ends, frequently three or four fathoms long, and as broad as the thickneſs of the wood will allow. The people in it do not row ſitting, but commonly a fellow ſtands at each end, with a ſhort oar in his hand, with which he governs and brings the canoe forwards. Thoſe which are made here at *Albany*, are commonly of the *white Pine*; they can do ſervice for eight or twelve years, eſpecially if they be tarred and painted. At *Albany* they make them of the white pine, ſince there is no other wood fit for them; at *New York* they are made of the tulip-tree, and in other parts they are made of red or white cedars: but both theſe trees are ſo ſmall, in the neighbourhood of *Albany*, that they are unfit for canoes; there are no ſeats in the canoes, for if they had any, they would be more liable to be overſet, as one could not keep the equilibrium ſo well.

BATTOES * are another kind of boats, which are much in uſe in *Albany:* they are made of boards of white pine; the bottom is flat, that they may row the better in ſhallow water; they are ſharp at both ends, and ſomewhat higher towards the end than in the middle. They have ſeats in them, and are rowed as common boats. They are long, yet not all alike, commonly three, and ſometimes four fathoms long. The height from the bottom to the top of the board (for the ſides ſtand almoſt perpendicular) is from twenty inches to two feet, and the breadth in the middle about a yard and ſix inches. They are chiefly made uſe of for carrying goods, by means of the rivers, to the *Indians*; that is, when thoſe rivers are open enough for the battoes to paſs through, and when they need not be carried by land a great way. The boats made of the bark of trees, break eaſily by knocking againſt a ſtone, and the canoes cannot carry a great cargo, and are eaſily overſet; the battoes are therefore preferable to them both. I ſaw no boats here like thoſe in *Sweden*, and other parts of *Europe*.

THE froſt does frequently a great deal of damage

* From the *French Bateaux (Boats)*.

damage at *Albany*. There is hardly a month in ſummer during which a froſt does not happen. The ſpring comes very late, and in *April* and *May* are numerous cold nights, which frequently kill the flowers of trees and kitchen-herbs. It was feared that the bloſſoms of the apple-trees had been ſo ſeverely damaged by the froſt, laſt *May*, that next autumn there would be but very few apples. The oak-bloſſoms are very often killed by the froſt in the woods. The autumn here is of long continuance, with warm days and nights. However, the cold nights commonly commence towards the end of *September*, and are frequent in *October*. The people are forced to keep their cattle in ſtables, from the middle of *November*, till *March* or *April*, and muſt find them hay during that time *.

During ſummer, the wind blows commonly from the South, and brings a great drought along with it. Sometimes it rains a little, and as ſoon as it has rained the wind veers to North Weſt, blowing for ſeveral days from that point, and then returning to the South. I have had fre-

* The reader muſt reckon all this according to the old ſtile.

quent opportunities of seeing this change of wind happen very exactly, both this year and the following.

June the 15th. The enclosures were made of boards of fir-wood, of which there is abundance in the extensive woods, and many saw-mills to cut it into boards.

THE several sorts of apple-trees grow very well here, and bear as fine fruit as in any other part of *North America*. Each farm has a large orchard. They have some apples here, which are very large, and very palatable; they are sent to *New York*, and other places as a rarity. They make excellent cyder, in autumn, in the country round *Albany*.

ALL the kinds of cherry-trees, which have been planted here, succeed very well.

PEAR-TREES do not succeed here. This was complained of in many other parts of *North America*. But I fear that they do not take sufficient care in the management and planting of them; for I have seen fine pears in several parts of *North America*.

PEACH-TREES have often been planted here, and never would succeed well. This was attributed to a worm which lives in the ground, and eats through the root, so that

that the tree dies. Perhaps the ſeverity of the winter contributes much to it.

THEY plant no other fruit-trees at *Albany* beſides theſe I have mentioned.

THEY ſow as much hemp and flax here, as they want for home conſumption.

THEY ſow maize in great abundance: A looſe ſoil is reckoned the beſt for this purpoſe; for it will not grow in clay. From half a buſhel they reap a hundred buſhels. They reckon maize a very good kind of corn, becauſe the ſhoot recovers after being hurt by the froſt. They have had examples here of the ſhoots dying twice in ſpring, to the very ground, and yet they ſhot up again afterwards, and afforded an excellent crop. Maize has likewiſe the advantage of ſtanding much longer againſt a drought, than wheat. The larger ſort of maize which is commonly ſown here, ripens in *September*.

THEY ſow wheat in the neighbourhood of *Albany*, with great advantage. From one buſhel they get twelve ſometimes; if the ſoil be good, they get twenty buſhels. If their crop amounts only to ten buſhels from one, they think it very trifling. The inhabitants of the country round *Albany*, are *Dutch* and *Germans*. The *Germans* live in ſeveral great villages, and ſow great

quantities of wheat, which is brought to *Albany*; and from thence they ſend many yachts laden with flour to *New York*. The wheat-flour from *Albany* is reckoned the beſt in all *North America*, except that from *Sopus* or *King's Town*, a place between *Albany* and *New York*. All the bread in *Albany* is made of wheat. At *New York* they pay the *Albany* flour with ſeveral ſhillings more *per* hundred weight, than that from other places.

Rye is likewiſe ſown here, but not ſo generally as wheat.

They do not ſow much barley here, becauſe they do not reckon the profits very great. Wheat is ſo plentiful that they make malt of it. In the neighbourhood of *New York*, I ſaw great fields ſown with barley.

They do not ſow more oats than are neceſſary for their horſes.

The *Dutch* and *Germans* who live hereabouts, ſow peaſe in great abundance; they ſucceed very well, and are annually carried to *New York*, in great quantities. They have been free from inſects for a conſiderable time. But of late years the ſame beetles which deſtroy the peaſe in *Penſylvania*, *New Jerſey*, and the lower parts of the province of *New York* *, have likewiſe appeared

* I have mentioned them before. See vol. i. p. 176, 177.

appeared abundant among the peaſe here. It is a real loſs to this town, and to the other parts of *North America*, which uſed to get peaſe from hence for their own conſumption, and that of their ſailors. It had been found that if they procured good peaſe from *Albany*, and ſowed them near *King's Town*, or the lower part of the province of *New York*, they ſucceeded very well the firſt year, but were ſo full of worms the ſecond, and following years, that nobody could or would eat them. Some people put aſhes into the pot, among the peaſe, when they will not boil, or ſoften well; but whether this is wholeſome and agreeable to the palate, I do not know.

POTATOES are generally planted. Some people preferred aſhes to ſand for keeping them in during winter.

THE *Bermuda Potatoes (Convolvulus Batatas)* have likewiſe been planted here, and ſucceed pretty well. The greateſt difficulty is to keep them during winter; for they generally rot in that ſeaſon.

THE *Humming-bird (Trochilus Colubris)* comes to this place ſometimes; but is rather a ſcarce bird.

THE ſhingles with which the houſes are covered are made of the White Pine, which

is reckoned as good and as durable, and sometimes better, than the White Cedar *(Cupressus thyoides)*. The White Pine is found abundant here, in such places where common pines grow in *Europe*. I have never seen them in the lower parts of the province of *New York*, nor in *New Jersey* and *Pensylvania*. They saw a vast quantity of deal from the White Pine on this side of *Albany*, which are brought down to *New York*, and from thence exported.

The woods abound with vines, which likewise grow on the steep banks of the river in surprising quantities. They climbed to the tops of trees on the bank, and bent them by their weight. But where they found no trees, they hung down along the steep shores, and covered them entirely. The grapes are eaten after the frost has attacked them; for they are too sour before. They are not much used any other way.

The vast woods and uninhabited grounds, between *Albany* and *Canada*, contain immense swarms of gnats, which annoy the travellers. To be in some measure secured against these insects, some besmear their face with butter or grease; for the gnats do not like to settle on greasy places. The great heat makes boots very uneasy; but to prevent the gnats from stinging the legs, they wrap some paper round them, under the stockings.

ſtockings. Some travellers wear caps which cover the whole face, and have ſome gauze before the eyes. At night they lie in tents, if they can carry any with them; and make a great fire at the entrance, by the ſmoke of which the gnats are driven away.

THE porpeſſes ſeldom go higher up the river *Hudſon* than the ſalt water goes; after that, the ſturgeons fill their place. It has however ſometimes happened, that porpeſſes have gone quite up to *Albany*.

THERE is a report, that a whale once came up the river quite to this town.

THE Fireflies *(Lampyris)* which are the ſame that are ſo common in *Penſylvania* during ſummer, are ſeen here in abundance every night. They fly up and down in the ſtreets of this town. They come into the houſes, if the doors and windows are open.

SEVERAL of the *Penſylvanian* trees are not to be met with in theſe woods; *viz.*

Magnolia glauca, the *Beaver-tree.*
Nyſſa aquatica, the *Tupelo-tree.*
Liquidambar ſtyraciflua, the *Sweet-gum tree.*
Dioſpyros Virginiana, the *Perſimon.*
Liriodendron tulipifera, the *Tulip-tree.*
Juglans nigra, the *black Walnut-tree.*
Quercus ——, the *Swamp Oak.*
Cercis Canadenſis, the *Sallad-tree.*
Robinia pſeudacacia, the *Locuſt-tree.*

Gleditſia

Gleditſia triacanthos, the *Honey-locuſt tree.*
Annona muricata, the *Papaw-tree.*
Celtis occidentalis, the *Nettle-tree.* And a number of ſhrubs, which are never found here.

The more northerly ſituation of the place, the height of the *Blue Mountains*, and the courſe of the rivers, which flow here ſouthward into the ſea, and accordingly carry the ſeeds of plants from north to ſouth, and not the contrary way, are chiefly the cauſes that ſeveral plants which grow in *Penſylvania* cannot be found here.

This afternoon I went to ſee an iſland which lies in the middle of the river, about a mile below the town. This iſland is an *Engliſh* mile long, and not above a quarter of a mile broad. It is almoſt entirely turned into corn-fields; and is inhabited by a ſingle planter, who, beſides poſſeſſing this iſland, is the owner of two more. Here we ſaw no woods, except a few trees which were left round the iſland on the ſhore, and formed as it were a tall and great hedge. The Red Maple *(Acer rubrum)* grows in abundance in ſeveral places. Its leaves are white or ſilvery on the under ſides, and, when agitated by the wind, they make the tree appear as if it was full of white flowers. The Water-beech *(Platanus occidentalis)* grows to a great height, and is one

one of the moſt ſhady trees here. The *Water-poplar** is the moſt common tree hereabouts, grows exceedingly well on the ſhores of the river, and is as tall as the talleſt of our aſps. In ſummer it affords the beſt ſhade for men and cattle againſt the ſcorching heat. On the banks of rivers and lakes it is one of the moſt uſeful trees, becauſe it holds the ſoil by its extenſive branched roots, and prevents the water from waſhing it away. The Water-beech and the Elm-tree *(Ulmus)* ſerve the ſame purpoſe. The wild Prune-trees were plentiful here, and were full of unripe fruit. Its wood is not made uſe of; but its fruit is eaten. Sumach *(Rhus glabra)* is plentiful here; as alſo the wild vines, which climb up the trees, and creep along the high ſhores of the river. I was told, that the grapes ripen very late, though they were already pretty large.

The *American* Elm-tree *(Ulmus Americana)* formed ſeveral high hedges. The ſoil of this iſland is a rich mould, mixed with ſand, which is chiefly employed in maize plantations. There were likewiſe large fields of potatoes. The whole iſland was

* *Populus glandulis variis baſi foliorum adnexis, foliis cordato-deltoidibus, acuminatis, ſerrato-anguloſis, utrinque glabris.* —An *Populus heterophylla* Linnæi?

was leaſed for one hundred pounds of *New York* currency. The perſon who had taken the leaſe, again let ſome greater and ſome ſmaller lots of ground, to the inhabitants of *Albany*, for making kitchen-gardens of; and by that means reimburſed himſelf. Portulack *(Portulaca oleracea)* grows ſpontaneouſly here in great abundance, and looks very well.

June the 20th. The tide in the river *Hudſon* goes about eight or ten *Engliſh* miles above *Albany*, and conſequently runs one hundred and fifty-ſix *Engliſh* miles from the ſea. In ſpring, when the ſnow melts, there is hardly any flowing near this town; for the great quantity of water which comes from the mountains during that ſeaſon, occaſions a continual ebbing. This likewiſe happens after heavy rains.

The cold is generally reckoned very ſevere here. The ice in the river *Hudſon* is commonly three or four feet thick. On the 3d of *April* ſome of the inhabitants croſſed the river with ſix pair of horſes. The ice commonly diſſolves about the end of *March*, or beginning of *April*. Great pieces of ice come down about that time, which ſometimes carry with them the houſes that ſtand cloſe to the ſhore. The water is very high at that time in the river,

river, becauſe the ice ſtops ſometimes, and ſticks in places where the river is narrow. The water has been often obſerved to riſe three fathom higher than it commonly is in ſummer. The ground is frozen here in winter to the depth of three, four, or five feet. On the 16th of *November* the yachts are put up, and about the beginning or middle of *April* they are in motion again. They are unacquainted with ſtoves; and their chimnies are ſo wide that one could drive through them with a cart and horſes.

THE water of ſeveral wells in this town was very cool about this time; but had a kind of acid taſte, which was not very agreeable. On a nearer examination, I found an abundance of little inſects in it, which were probably *Monoculi*. Their length was different; ſome were a geometrical line and an half, others two, and others four lines long. They were very narrow, and of a pale colour. The head was blacker and thicker than the other parts of the body, and about the ſize of a pin's head. The tail was divided into two branches, and each branch terminated in a little black globule. When theſe inſects ſwim, they proceed in crooked or undulated lines, almoſt like *Tadpoles*. I poured ſome of this water into a bowl, and put near a fourth part of rum to it.

it. The *Monoculi*, inſtead of being affected with it, ſwam about as briſkly as they had done in the water. This ſhews, that if one makes punch with this water, it muſt be very ſtrong to kill the *Monoculi*. I think this water is not very wholeſome for people who are not uſed to it, though the inhabitants of *Albany*, who drink it every day, ſay, they do not feel the leaſt inconvenience from it. I have been ſeveral times obliged to drink water here, in which I have plainly ſeen *Monoculi* ſwimming; but I generally felt the next day ſomewhat like a pea in my throat, or as if I had a ſwelling there; and this continued for above a week. I felt ſuch ſwellings this year, both at *Albany* and in other parts. My ſervant, *Yungſtroem*, likewiſe got a great pain in his breaſt, and a ſenſation as from a ſwelling, after drinking water with *Monoculi* in it: but whether theſe inſects occaſioned it, or whether it came from ſome other cauſe, I cannot aſcertain. However, I have always endeavoured, as much as poſſible, to do without ſuch water as had *Monoculi* in it. I have found *Monoculi* in very cold water, taken from the deepeſt wells, in different parts of this country. Perhaps many of our diſeaſes ariſe from waters of this kind, which we do not ſufficiently examine. I have frequently

frequently obſerved abundance of minute inſects in water, which has been remarkable for its clearneſs. Almoſt each houſe in *Albany* has its well, the water of which is applied to common uſe; but for tea, brewing, and waſhing, they commonly take the water of the river *Hudſon*, which flows cloſe by the town. This water is generally quite muddy, and very warm in ſummer; and, on that account, it is kept in cellars, in order that the ſlime may ſubſide, and that the water may cool a little.

We lodged with a gunſmith, who told us, that the beſt charcoals for the forge were made of the *Black Pine*. The next in goodneſs, in his opinion, were charcoals, made of the *Beech-tree*.

The beſt and deareſt ſtocks for his muſkets were made of the wood of the wild Cherry-tree; and next to theſe he valued thoſe of the Red Maple moſt. They ſcarce make uſe of any other wood for this purpoſe. The black Walnut-tree affords excellent wood for ſtocks; but it does not grow in the neighbourhood of *Albany*.

June the 21ſt. Next to the town of *New York*, *Albany* is the principal town, or at leaſt the moſt wealthy, in the province of *New York*. It is ſituated on the declivity of a hill, cloſe to the weſtern ſhore of the

river

river *Hudſon*, about one hundred and forty-ſix *Engliſh* miles from *New York*. The town extends along the river, which flows here from N. N. E. to S. S. W. The high mountains in the weſt, above the town, bound the proſpect on that ſide. There are two churches in *Albany*, an *Engliſh* one and a *Dutch* one. The *Dutch* church ſtands at ſome diſtance from the river, on the eaſt ſide of the market. It is built of ſtone; and in the middle it has a ſmall ſteeple, with a bell. It has but one miniſter, who preaches twice every *Sunday*. The *Engliſh* church is ſituated on the hill, at the weſt end of the market, directly under the fort. It is likewiſe built of ſtone, but has no ſteeple. There was no ſervice at this church at this time, becauſe they had no miniſter; and all the people underſtood *Dutch*, the garriſon excepted. The miniſter of this church has a ſettled income of one hundred pounds ſterling, which he gets from *England*. The town-hall lies to the ſouthward of the *Dutch* church, cloſe by the river ſide. It is a fine building of ſtone, three ſtories high. It has a ſmall tower or ſteeple, with a bell, and a gilt ball and vane at the top of it.

THE houſes in this town are very neat, and partly built with ſtones covered with ſhin-

gles

gles of the *White Pine*. Some are ſlated with tiles from *Holland*, becauſe the clay of this neighbourhood is not reckoned fit for tiles. Moſt of the houſes are built in the old way, with the gable-end towards the ſtreet; a few excepted, which were lately built in the manner now uſed. A great number of houſes were built like thoſe of *New Brunſwick*, which I have deſcribed *; the gable-end being built, towards the ſtreet, of bricks, and all the other walls of planks. The outſide of the houſes is never covered with lime or mortar, nor have I ſeen it practiſed in any *North-American* towns which I have viſited; and the walls do not ſeem to be damaged by the air. The gutters on the roofs reach almoſt to the middle of the ſtreet. This preſerves the walls from being damaged by the rain; but is extremely diſagreeable in rainy weather for the people in the ſtreets, there being hardly any means of avoiding the water from the gutters. The ſtreet-doors are generally in the middle of the houſes; and on both ſides are ſeats, on which, during fair weather, the people ſpend almoſt the whole day, eſpecially on thoſe which are in the ſhadow of the houſes. In the evening theſe ſeats are covered with people of both ſexes; but this

* See Vol. I. p. 228, &c.

is rather troubleſome, as thoſe who paſs by are obliged to greet every body, unleſs they will ſhock the politeneſs of the inhabitants of this town. The ſtreets are broad, and ſome of them are paved; in ſome parts they are lined with trees; the long ſtreets are almoſt parallel to the river, and the others interſect them at right angles. The ſtreet which goes between the two churches, is five times broader than the others, and ſerves as a market-place. The ſtreets upon the whole are very dirty, becauſe the people leave their cattle in them, during the ſummer nights. There are two market-places in the town, to which the country people reſort twice a week.

The fort lies higher than any other building, on a high ſteep hill on the weſt ſide of the town. It is a great building of ſtone, ſurrounded with high and thick walls; its ſituation is very bad, as it can only ſerve to keep off plundering parties, without being able to ſuſtain a ſiege. There are numerous high hills to the weſt of the fort, which command it, and from whence one may ſee all that is done within it. There is commonly an officer and a number of ſoldiers quartered in it. They ſay the fort contains a ſpring of water.

The ſituation of *Albany* is very advantageous

tageous in regard to trade. The river *Hudſon*, which flows cloſe by it, is from twelve to twenty feet deep. There is not yet any quay made for the better lading of the yachts, becauſe the people feared it would ſuffer greatly, or be entirely carried away in ſpring by the ice, which then comes down the river; the veſſels which are in uſe here, may come pretty near the ſhore in order to be laden, and heavy goods are brought to them upon canoes tied together. *Albany* carries on a conſiderable commerce with *New York*, chiefly in furs, boards, wheat, flour, peaſe, ſeveral kinds of timber, &c. There is not a place in all the *Britiſh* colonies, the *Hudſon's Bay* ſettlements excepted, where ſuch quantities of furs and ſkins are bought of the *Indians*, as at *Albany*. Moſt of the merchants in this town ſend a clerk or agent to *Oſwego*, an *Engliſh* trading town upon the lake *Ontario*, to which the *Indians* reſort with their furs. I intend to give a more minute account of this place in my Journal for the year 1750. The merchants from *Albany* ſpend the whole ſummer at *Oſwego*, and trade with many tribes of *Indians* who come to them with their goods. Many people have aſſured me, that the *Indians* are frequently cheated in diſpoſing of their goods, eſpecially when they are in

liquor, and that ſometimes they do not get one half or even one tenth of the value of their goods. I have been a witneſs to ſeveral tranſactions of this kind. The merchants of *Albany* glory in theſe tricks, and are highly pleaſed when they have given a poor *Indian* a greater portion of brandy than he can bear, and when they can after that get all his goods for mere trifles. The *Indians* often find when they are ſober again, that they have been cheated, they grumble ſomewhat, but are ſoon ſatisfied when they reflect that they have for once drank as much as they are able, of a liquor which they value beyond any thing elſe in the whole world, and they are quite inſenſible to their loſs, if they again get a draught of this nectar. Beſides this trade at *Oſwego*, a number of *Indians* come to *Albany* from ſeveral parts, eſpecially from *Canada*; but from this latter place, they hardly bring any thing but beaver-ſkins. There is a great penalty in *Canada* for carrying furs to the *Engliſh*, that trade belonging to the *French Weſt India* Company; notwithſtanding which the *French* merchants in *Canada* carry on a conſiderable ſmuggling trade. They ſend their furs, by means of the *Indians*, to their correſpondents at *Albany*, who purchaſe it at the price which they have

have fixed upon with the *French* merchants. The *Indians* take in return ſeveral kinds of cloth, and other goods, which may be got here at a lower rate than thoſe which are ſent to *Canada* from *France*.

THE greater part of the merchants at *Albany* have extenſive eſtates in the country, and a great deal of wood. If their eſtates have a little brook, they do not fail to erect a ſaw-mill upon it for ſawing boards and planks, with which commodity many yachts go during the whole ſummer to *New York*, having ſcarce any other lading than boards.

Many people at *Albany* make the *wampum* of the *Indians*, which is their ornament and their money, by grinding ſome kinds of ſhells and muſcles; this is a conſiderable profit to the inhabitants. I ſhall ſpeak of this kind of money in the ſequel. The extenſive trade which the inhabitants of *Albany* carry on, and their ſparing manner of life, in the *Dutch* way, contribute to the conſiderable wealth which many of them acquire.

THE inhabitants of *Albany* and its environs are almoſt all *Dutchmen*. They ſpeak *Dutch*, have *Dutch* preachers, and divine ſervice is performed in that language: their manners are likewiſe quite *Dutch*; their dreſs is however like that of the *Engliſh*. It is well known that the firſt

Europeans who ſettled in the province of *New York* were *Dutchmen*. During the time that they were the maſters of this province, they poſſeſſed themſelves of *New Sweden**, of which they were jealous. However the pleaſure of poſſeſſing this conquered land and their own, was but of ſhort duration; for towards the end of 1664, Sir *Robert Carre*, by order of King *Charles* the ſecond, went to *New York*, then *New Amſterdam*, and took it. Soon after Colonel *Nichols* went to *Albany*, which then bore the name of *Fort Orange*, and upon taking it, named it *Albany*, from the Duke of *York*'s *Scotch* title. The *Dutch* inhabitants were allowed either to continue where they were, and, under the protection of the *Engliſh*, to enjoy all their former privileges, or to leave the country. The greater part of them choſe to ſtay, and from them the *Dutchmen* are deſcended, who now live in the province of *New York*, and who poſſeſs the greateſt and beſt eſtates in that province.

THE avarice and ſelfiſhneſs of the inhabitants of *Albany* are very well known throughout all *North America*, by the *Engliſh*, by the *French*, and even by the *Dutch*, in the lower part of *New York* province. If a Jew, who underſtands the art of getting forward

* *New Jerſey* and part of *Penſylvania* were formerly comprized under this name.

forward perfectly well, should settle amongst them, they would not fail to ruin him. For this reason nobody comes to this place without the most pressing necessity; and therefore I was asked in several places, what induced me to go to it, two years one after another. I likewise found that the judgment, which people formed of them, was not without foundation. For though they seldom see any strangers, (except those who go from the *British* colonies to *Canada* and back again) and one might therefore expect to find victuals and accommodation for travellers cheaper than in places, where travellers always resort to; yet I experienced the contrary. I was here obliged to pay for every thing twice, thrice, and four times as dear as in any part of *North America* which I have passed through. If I wanted their assistance, I was obliged to pay them very well for it, and when I wanted to purchase any thing, or to be helped in some case or other, I could presently see what kind of blood ran in their veins; for they either fixed exorbitant prices for their services, or were very backward to assist me. Such was this people in general. However, there were some amongst them who equalled any in *North America*, or any where else, in politeness, equity, goodness,

and readineſs to ſerve and to oblige; but their number fell far ſhort of that of the former. If I may be allowed to declare my conjectures, the origin of the inhabitants of *Albany* and its neighbourhood ſeems to me to be as follows. Whilſt the *Dutch* poſſeſſed this country, and intended to people it, the government took up a pack of vagabonds, of which they intended to clear the country, and ſent them along with a number of other ſettlers to this province. The vagabonds were ſent far from the other coloniſts, upon the borders towards the *Indians* and other enemies, and a few honeſt families were perſuaded to go with them, in order to keep them in bounds. I cannot any other way account for the difference between the inhabitants of *Albany*, and the other deſcendants of ſo reſpectable a nation as the *Dutch*, who are ſettled in the lower part of *New York* province. The latter are civil, obliging, juſt in the prices, and ſincere; and though they are not ceremonious, yet they are well meaning and honeſt, and their promiſes are to be relied on.

The behaviour of the inhabitants of *Albany*, during the war between *England* and *France*, which was ended with the peace of *Aix la Chapelle*, has, among ſeveral other cauſes, contributed to make them the

the object of hatred in all the *British* colonies, but more especially in *New England*. For at the beginning of that war, when the *Indians* of both parties had received orders to commence hostilities, the *French* engaged theirs to attack the inhabitants of *New England*; which they faithfully executed, killing every body they met with, and carrying off whatever they found. During this time the people of *Albany* remained neutral, and carried on a great trade with the very *Indians* who murdered the inhabitants of *New England*. The plate, such as silver spoons, bowls, cups, &c. of which the *Indians* robbed the houses in *New England*, was carried to *Albany*, for sale. The people of that town bought up these silver vessels, though the names of the owners were graved on many of them, and encouraged the *Indians* to get more of them, promising to pay them well, and whatever they would demand. This was afterwards interpreted by the inhabitants of *New England*, as if the *Albanians* encouraged the *Indians* to kill more of the people, who were in a manner their brothers, and who were subjects of the same crown. Upon the first news of this behaviour, which the *Indians* themselves

spread

ſpread in *New England*, the inhabitants of the latter province were greatly incenſed, and threatened, that the firſt ſtep they would take in another war, would be to burn *Albany*, and the adjacent parts. In the preſent war it will ſufficiently appear how backward the other *Britiſh* provinces in *America* are in aſſiſting *Albany*, and the neighbouring places, in caſe of an attack from the *French* or *Indians* *. The hatred which the *Engliſh* bear againſt the people, at *Albany*, is very great, but that of the *Albanians* againſt the *Engliſh* is carried to a ten times higher degree. This hatred has ſubſiſted ever ſince the time when the *Engliſh* conquered this country, and is not yet extinguiſhed, though they could never have got ſuch advantages under the *Dutch* government, as they have obtained under that of the *Engliſh*. For in a manner, their privileges are greater than thoſe of *Engliſhmen*.

The inhabitants of *Albany* are much more ſparing than the *Engliſh*. The meat which is ſerved up is often inſufficient to ſatisfy the ſtomach, and the bowl does not cir-

* Mr. *Kalm* publiſhed his third volume juſt during the time of the laſt war. F.

circulate ſo freely as amongſt the *Engliſh*. The women are perfectly well acquainted with œconomy; they riſe early, go to ſleep very late, and are almoſt over nice and cleanly, in regard to the floor, which is frequently ſcoured ſeveral times in the week. The ſervants in the town are chiefly negroes. Some of the inhabitants wear their own hair, but it is very ſhort, without a bag or queue, which are looked upon as the characteriſtics of *Frenchmen*; and as I wore my hair in a bag the firſt day I came here from *Canada*, I was ſurrounded with children, who called me *Frenchman*, and ſome of the boldeſt offered to pull at my *French* dreſs.

THEIR meat, and manner of dreſſing it, is very different from that of the *Engliſh*. Their breakfaſt is tea, commonly without milk. About thirty or forty years ago, tea was unknown to them, and they breakfaſted either upon bread and butter, or bread and milk. They never put ſugar into the cup, but take a ſmall bit of it into their mouths whilſt they drink. Along with the tea they eat bread and butter, with ſlices of hung beef. Coffee is not uſual here; they breakfaſt generally about ſeven. Their dinner is butter-milk, and bread, to which they ſometimes add ſugar, then

then it is a delicious dish for them; or fresh milk and bread; or boiled or roasted flesh. They sometimes make use of butter-milk instead of fresh milk, to boil a thin kind of porridge with, which tastes very sour, but not disagreeable in hot weather. To each dinner they have a great sallad, prepared with abundance of vinegar, and very little or no oil. They frequently eat butter-milk, bread, and sallad, one mouthful after another. Their supper is generally bread and butter, and milk and bread. They sometimes eat cheese at breakfast, and at dinner; it is not in slices, but scraped or rasped, so as to resemble coarse flour, which they pretend adds to the good taste of cheese. They commonly drink very small beer, or pure water.

The governor of *New York* often confers at *Albany*, with the *Indians* of the Five Nations, or the *Iroquese*, (*Mohawks*, *Senekas*, *Cayugaws*, *Onondagoes*, and *Onidoes*) especially when they intend either to make war upon, or to continue a war against the *French*. Sometimes their deliberations likewise turn upon their conversion to the christian religion, and it appears by the answer of one of the *Indian* chiefs, or *Sachems*, to governor *Hunter*, at a conference in this town, that the *English* do not pay

so

ſo much attention to a work of ſo much conſequence, as the *French* do, and that they do not ſend ſuch able men to inſtruct the *Indians*, as they ought to do *. For after governor *Hunter* had preſented theſe *Indians*, by order of Queen *Anne*, with many clothes, and other preſents, of which they were fond, he intended to convince them ſtill more of her Majeſty's good-will, and care for them, by adding, *that their good mother, the Queen, had not only generouſly provided them with fine clothes for their bodies, but likewiſe intended to adorn their*

* Mr. *Kalm* is, I believe, not right informed. The *French* eccleſiaſtics have allured ſome few wretched *Indians* to their religion and intereſt, and ſettled them in ſmall villages; but by the accounts of their behaviour, in the ſeveral wars of the *French* and *Engliſh*, they were always guilty of the greateſt cruelties and brutalities; and more ſo than their heathen countrymen; and therefore it ſeems that they have been rather perverted than converted. On the other hand, the *Engliſh* have tranſlated the bible into the language of the *Virginian Indians*, and converted many of them to the true knowledge of God; and at this preſent time, the *Indian* charity ſchools, and miſſions, conducted by the Rev. Mr. *Eleazar Wheelock*, have brought numbers of the *Indians* to the knowledge of the true God. The ſociety for propagating the goſpel in foreign parts, ſends every year many miſſionaries, at their own expence, among the *Indians*. And the *Moravian Brethren* are alſo very active in the converſion of *Gentiles*; ſo that if Mr. *Kalm* had conſidered all theſe circumſtances, he would have judged otherwiſe of the zeal of the *Britiſh* nation, in propagating the goſpel among the *Indians*. F.

their ſouls, by the preaching of the goſpel; and that to this purpoſe ſome miniſters ſhould be ſent to them, to inſtruct them. The governor had ſcarce ended, when one of the oldeſt *Sachems* got up, and anſwered, *that in the name of all the Indians, he thanked their gracious good queen and mother for the fine clothes ſhe had ſent them; but that in regard to the miniſters, they had already had ſome among them,* (whom he likewiſe named) *who inſtead of preaching the holy goſpel to them, had taught them to drink to exceſs, to cheat, and to quarrel among themſelves.* He then entreated the governor to take from them theſe preachers, and a number of *Europeans* who reſided amongſt them; for before they were come among them, the *Indians* had been an honeſt, ſober, and innocent people, but moſt of them became rogues now. That they had formerly had the fear of God, but that they hardly believed his exiſtence at preſent. That if he (the governor) would do them any favour, he ſhould ſend two or three blackſmiths amongſt them, to teach them to forge iron, in which they were unexperienced. The governor could not forbear laughing at this extraordinary ſpeech. I think the words of St. *Paul* not wholly unapplicable on this

this occaſion: *For the name of God is blaſphemed amongſt the Gentiles, through you* †.

June the 21ſt. About five o'clock in the afternoon we left *Albany*, and proceeded towards *Canada*. We had two men with us, who were to accompany us to the firſt *French* place, which is Fort *St. Frederick*, or, as the *Engliſh* call it, *Crown Point*. For this ſervice each of them was to receive five pounds of *New York* currency, beſides which I was to provide them with victuals. This is the common price here, and he that does not chooſe to conform to it, is obliged to travel alone. We were forced to take up with a canoe *, as we could get neither battoes, nor boats of bark; and as there was a good road along the weſt ſide of the river *Hudſon*, we left the men to row forwards, in the canoe, and we went along it on the ſhore, that we might be better able to examine it, and its curioſities, with greater accuracy. It is very incommodious to row in theſe canoes; for one ſtands at each end and puſhes the boat forwards. They commonly keep cloſe to the ſhore, that they may be able to

† Romans ii. 24.
* See the deſcription of it, p. 241.

to reach the ground eaſily. Thus the rowers are forced to ſtand upright, whilſt they row in a canoe. We kept along the ſhore all the evening, towards the river, it conſiſted of great hills, and next to the water grew the trees, which I have above mentioned *, and which likewiſe are to be met with on the ſhores of the iſle, in the river, ſituate below *Albany*. The eaſterly ſhore of the river is uncultivated, woody, and hilly; but the weſtern is flat, cultivated, and chiefly turned into corn-fields, which had no drains, though they wanted them in ſome places. It appeared very plainly here, that the river had formerly been broader. For there is a ſloping bank on the corn-fields, at about thirty yards diſtance from the river, with which it always runs parallel. From this it ſufficiently appears, that the riſing ground formerly was the ſhore of the river, and the corn-fields its bed. As a further proof, it may be added, that the ſame ſhells which abound on the preſent ſhore of the river, and are not applied to any uſe by the inhabitants, ly plentifully ſcattered on theſe fields. I cannot ſay whether this change was occaſioned by the diminiſhing of the water

* See page 251.

water in the river, or by its washing some earth down the river, and carrying it to its sides, or by the river's cutting deeper in on the sides.

All the grounds were ploughed very even, as is usual in the *Swedish* province of *Upland*. Some were sown with *yellow*, and others with *white Wheat*. Now and then we saw great fields of flax, which was now beginning to flower. In some parts it grows very well, and in others it was but indifferent. The excessive drought which had continued throughout this spring, had parched all the grass and plants on hills and high grounds, leaving no other green plant than the common *Mullein (Verbascum Thapsus Linn.)* which I saw in several places, on the driest and highest hills, growing in spite of the parching heat of the sun, and though the pastures and meadows were excessively poor, and afforded scarce any food at all, yet the cattle never touched the *Mullein*. Now and then I found fields with pease, but the *Charlock, (Sinapis arvensis Linn.)* kept them quite under. The soil in most of these fields is a fine mould, which goes pretty deep.

The wild vines cover all the hills along the rivers, on which no other plants grow, and on those which are covered with trees,

they climb to the tops of them, and wholly cover them, making them bend down with their weight. They had already large grapes; we saw them abundant all this day, and during all the time that we kept to the river *Hudson*, on the hills, along the shores, and on some little islands in the river.

The *white-b ck'd Maize-thieves* appeared now and then, flying amongst the bushes: their note is fine, and they are not so large as the black maize-thieves, *(Oriolus Phœniceus)*. We saw them near *New York*, for the first time.

We found a *Water-beech* tree *(Platanus occidentalis)* cut down near the road, measuring about five feet in diameter.

This day, and for some days afterwards, we met with islands in the river. The larger ones were cultivated, and turned into corn-fields and meadows.

We walked about five *English* miles along the river to-day, and found the ground, during that time, very uniform, and consisting of pure earth. I did not meet with a single stone on the fields. The Red Maple, the Water-beech, the Water-asp, the wild Prune-tree, the Sumach, the Elm, the wild Vines, and some species of Willows, were the

the trees which we met with on the rising shores of the river, where some Asparagus (*Asparagus officinalis*) grew wild.

We passed the night about six miles from *Albany*, in a countryman's cottage. On the west side of the river we saw several houses, one after another, inhabited by the descendants of the first *Dutch* settlers, who lived by cultivating their grounds. About half an *English* mile beyond our lodgings, was the place where the tide stops in the river *Hudson*, there being only small and shallow streams above it. At that place they catch a good many sorts of fish in the river.

The barns were generally built in the *Dutch* way, as I have before described them *; for in the middle was the threshing-floor, above it a place for the hay and straw, and on each side stables for horses, cows, and other animals. The barn itself was very large. Sometimes the buildings in the court-yard consist only of a room, and a garret above it, together with a barn upon the above plan.

June the 22d. This morning I followed one of our guides to the water-fall near *Cohoes*, in the river *Mohawk*, before it falls

* See in the first Volume, p. 223, 224.

into the river *Hudſon*. This fall is about three *Engliſh* miles from the place where I paſſed the night. The country till the fall is a plain, and only hilly about the fall itſelf. The wood is cleared in moſt places, and the ground cultivated, and interſperſed with farm-houſes.

THE *Cohoes Fall* is one of the greateſt in *North America*. It is in the river *Mohawk*, before it unites with the river *Hudſon*. Above and below the fall, the ſides and the bottom of the river conſiſt of hard rock. The river is three hundred yards broad here. At the fall there is a rock croſsways in the river, running every where equally high, and croſſing in a ſtrait line with the ſide which forms the fall. It repreſents, as it were, a wall towards the lower ſide, which is not quite perpendicular, wanting about four yards. The height of this wall, over which the water rolls, appeared to me about twenty or twenty-four yards. I had marked this height in my pocket-book; and afterwards found it agreed pretty well with the account which that ingenious engineer, Mr. *Lewis Evans*, communicated to me at *Philadelphia*. He ſaid, that he had geometrically meaſured the breadth and height of the fall, and found it nine hundred *Engliſh* feet

broad, and seventy-five feet high. The representation of this fall, which is here joined, has been made by Mr. *Evans*. There was very little water in the river at present, and it only ran over the fall in a few places. In such places where the water had rolled down before, it had cut deep holes below into the rock, sometimes to the depth of two or three fathoms. The bed of the river, below the fall, was of rock, and quite dry, there being only a channel in the middle fourteen feet broad, and a fathom or somewhat more deep, through which the water passed which came over the fall. We saw a number of holes in the rock, below the fall, which bore a perfect resemblance to those in *Sweden* which we call *Giants Pots*, or *Mountain Kettles*. They differed in size; there being large deep ones, and small shallow ones. We had clear uninterrupted sun-shine, not a cloud above the horizon, and no wind at all. However, close to this fall, where the water was in such a small quantity, there was a continual drizzling rain, occasioned by the vapours which rose from the water during its fall, and were carried about by the wind. Therefore, in coming within a musket-shot of the fall, against the wind, our cloaths were

wetted at once, as from a rain. The whirlpools, which were in the water below the fall, contained ſeveral kinds of fiſh; and they were caught by ſome people, who amuſed themſelves with angling. The rocks hereabouts conſiſt of the ſame black ſtone which forms the hills about *Albany*. When expoſed to the air, it is apt to ſhiver into horizontal flakes, as ſlate does.

AT noon we continued our journey to *Canada* in the canoe, which was pretty long, and made out of a white pine. Somewhat beyond the farm where we lay at night, the river became ſo ſhallow that the men could reach the ground every where with their oars; it being in ſome parts not above two feet, and ſometimes but one foot deep. The ſhore and bed of the river conſiſted of ſand and pebbles. The river was very rapid, and againſt us; ſo that our rowers found it hard work to get forward againſt the ſtream. The hills along the ſhore conſiſted merely of ſoil; and were very high and ſteep in ſome parts. The breadth of the river was generally near two muſket-ſhot.

STURGEONS abound in the river *Hudſon*. We ſaw them for ſeveral days together leap high up into the air, eſpecially in the evening; our guides, and the people who lived hereabouts, aſſerted that they never ſee any

ſturgeons

ſturgeons in winter time, becauſe theſe fiſh go into the ſea late in autumn, but come up again in ſpring and ſtay in the river all the ſummer. They are ſaid to prefer the ſhalloweſt places in the river, which agreed pretty well with our obſervations; for we never ſaw them leap out of the water but in ſhallows. Their food is ſaid to be ſeveral kinds of *conferv*æ, which grow in plenty in ſome places at the bottom of the river; for theſe weeds are found in their bellies when they are opened. The *Dutch* who are ſettled here, and the *Indians*, fiſh for ſturgeons, and every night of our voyage upon this river, we obſerved ſeveral boats with people who ſtruck them with harpoons. The torches which they employed were made of that kind of pine, which they call the black pine here. The nights were exceedingly dark, though they were now ſhorteſt, and though we were in a country ſo much to the South of *Sweden*. The ſhores of the river lay covered with dead ſturgeons, which had been wounded with the harpoon, but eſcaped, and died afterwards; they occaſioned an inſupportable ſtench during the exceſſive heat of the weather.

As we went further up the river we ſaw an *Indian* woman and her boy ſitting in a

boat of bark, and an *Indian* wading through the river, with a great cap of bark on his head. Near them was an iſland on which there were a number of *Indians* at preſent, on account of the ſturgeon fiſhery. We went to their huts to try if we could get one of them to accompany us to *Fort St. Frederic.* On our arrival we found that all the men were gone into the woods a hunting this morning, and we were forced to engage their boys to go and look for them. They demanded bread for payment, and we gave them twenty little round loaves; for as they found that it was of great importance to us to ſpeak with the *Indians*, they raiſed difficulties, and would not go till we gave them what they wanted. The iſland belonged to the *Dutch*, who had turned it into corn-fields. But at preſent they had leaſed it to the *Indians*, who planted their maize and ſeveral kinds of melons on it. They built their huts or *wigwams* on this iſland, on a very ſimple plan. Four poſts were put into the ground perpendicularly, over which they had placed poles, and made a roof of bark upon them. They had either no walls at all, or they conſiſted of branches with leaves, which were fixed to the poles. Their beds conſiſted of deer-ſkins which were ſpread on the ground. Their utenſils were a couple of ſmall kettles, and two

two ladles, and a bucket or two of bark, made so close as to keep water. The sturgeons were cut into long slices, and hung up in the sunshine to dry, and to be ready against winter. The *Indian* women were sitting at their work on the hill, upon deer-skins. They never make use of chairs, but sit on the ground: however, they do not sit cross-legged, as the *Turks* do, but between their feet, which, though they be turned backwards, are not crossed, but bent outwards. The women wear no head-dress, and have black hair. They have a short blue petticoat, which reaches to their knees, and the brim of which is bordered with red or other ribbands. They wear their shifts over their petticoats. They have large ear-rings: and their hair is tied behind, and wrapped in ribbands. Their *Wampum*, or Pearls, and their money, which is made of shells, are tied round the neck, and hang down on the breast. This is their whole dress. They were now making several kinds of work of skins, to which they sowed the quills of the *American Porcupines*, having dyed them black or red, or left them in their original colour.

Towards evening, we went from hence to a farm close to the river, where we found only one man, looking after the maize and the fields; the inhabitants being not yet returned since the end of the war.

The

THE little brooks here contain Crawfiſh, which are exactly the ſame with ours *, with this difference only, that they are ſomewhat leſs; however, the *Dutch* inhabitants will not eat them.

June the 23d. WE waited a good while for the *Indians*, who had promiſed to come home, in order to ſhew us the way to *Fort St. Ann*, and to aſſiſt us in making a boat of bark, to continue our voyage. About eight o'clock three of the men arrived. Their hair was black, and cut ſhort; they wore rough pieces of woollen cloth, of a bright green colour, on their ſhoulders, a ſhirt which covers their thighs, and pieces of cloth, or ſkins, which they wrap round the legs and part of the thighs. They had neither hats, caps, nor breeches. Two of them had painted the upper part of their foreheads, and their cheeks, with vermilion. Round their neck was a ribband, from which hung a bag down to the breaſt, containing their knives. They promiſed to accompany us for thirty ſhillings; but ſoon after changed their minds, and went with an *Engliſhman*, who gave them more. Thus we were obliged to make this journey quite alone. The *Indians*, however, were honeſt enough to return us fifteen ſhillings, which we had paid them before-hand.

OUR

* *Cancer Aſtacus Linn.*

OUR laſt night's lodging was about ten *Engliſh* miles from *Albany*. During the laſt war, which was juſt now ended, the inhabitants had all retreated from thence to *Albany*, becauſe the *French Indians* had taken or killed all the people they met with, ſet the houſes on fire, and cut down the trees. Therefore, when the inhabitants returned, they found no houſes, and were forced to ly under a few boards which were huddled together.

THE river was almoſt a muſket-ſhot broad, and the ground on both ſides cultivated. The hills near the river were ſteep, and the earth of a pale colour.

THE *American* Elder (*Sambucus occidentalis* *) grows in incredible quantities along thoſe hills, which appear quite white, from the abundance of flowers on the Elder.

ALL this day along, we had one current after another, full of ſtones, which were great obſtacles to our getting forward. The water in the river was very clear, and generally ſhallow, being only from two to four feet deep, running very violently againſt us in moſt places. The ſhore was covered with pebbles, and a grey ſand. The hills conſiſted of earth, were high, and ſtood perpendicular towards the river, which was near

* *Sambucus Canadenſis Linn.*

near two muſket-ſhot broad. Sometimes the land was cultivated, and ſometimes it was covered with woods.

THE hills near the river abound with red and white clover. We found both theſe kinds plentiful in the woods. It is therefore difficult to determine whether they were brought over by the *Europeans*, as ſome people think; or whether they were originally in *America*, which the *Indians* deny.

WE found Purſlane *(Portulaca oleracea)* growing plentifully in a ſandy ſoil. In gardens it was one of the worſt weeds.

WE found people returning every where to their habitations, which they had been forced to leave during the war.

THE farms were commonly built cloſe to the river, on the hills. Each houſe has a little kitchen-garden, and a ſtill leſſer orchard. Some farms, however, had large gardens. The kitchen-gardens afford ſeveral kinds of gourds, water-melons, and kidney-beans. The orchards are full of apple-trees. This year the trees had few or no apples, on account of the froſty nights which had happened in *May*, and the drought which had continued throughout this ſummer.

THE

THE houſes hereabouts are generally built of beams of wood, and of unburnt bricks dried by the ſun and the air. The beams are firſt erected, and upon them a gable with two walls, and the ſpars. The wall on the gable is made of boards. The roof is covered with ſhingles of fir. They make the walls of unburnt bricks, between the beams, to keep the rooms warmer; and that they might not eaſily be deſtroyed by rain and air, they are covered with boards on the outſide. The cellar is below the houſe.

THE farms are either built cloſe to the river-ſide, or on the high grounds; and around them are large fields with maize.

WE ſaw great numbers of *Muſk-Rats (Caſtor Zibethicus Linn.)* on the ſhores of the river, where they had many holes, ſome on a level with the ſurface of the water. Theſe holes were large enough to admit a kitten. Before and in the entrance to the holes, lay a quantity of empty ſhells, the animals of which had been eaten by the *Muſk-Rats**. They are caught in traps placed along the water-ſide, and baited with ſome maize or apples.

THE

* This appears to be a new obſervation, as *Linnæus*, *De Buffon*, and *Sarraſin* pretend, they only feed on the *Acorus*, or Reeds, and other roots. F.

THE *Saſſafras-trees* abound here, but never grow to any conſiderable height.

CHESTNUT-TREES appear now and then.

THE *Cockſpur Hawthorn (Cratægus Crus Galli Linn.)* grows in the pooreſt ſoil, and has very long ſpines; which ſhews, that it may be very advantageouſly planted in hedges, eſpecially in a poor ſoil.

THIS night we lodged with a farmer, who had returned to his farm after the war was over. All his buildings, except the great barn, were burnt.

June the 24th. THE farm where we paſſed the night was the laſt in the province of *New York*, towards *Canada*, which had been left ſtanding, and which was now inhabited. Further on, we met ſtill with inhabitants: but they had no houſes, and lived in huts of boards; the houſes being burnt during the war.

As we continued our journey, we obſerved the country on both ſides of the river to be generally flat, but ſometimes hilly; and large tracts of it are covered with woods of fir-trees. Now and then we found ſome parts turned into corn-fields and meadows; however, the greater part was covered with woods. Ever ſince we left *Albany*, almoſt half-way to *Saratoga*, the river runs very rapid; and it coſt us a deal

deal of pains to get upwards. But afterwards it becomes very deep, for the ſpace of ſeveral miles; and the water moves very ſlowly. The ſhores are very ſteep, though they are not very high. The river is two muſket-ſhot broad. In the afternoon it changed its direction; for hitherto its direction was from North to South, but now it came from N. N. E. to S. S. W. and ſometimes from N. E. to S. W.

ANTHILLS are very ſcarce in *America*; and I do not remember ſeeing a ſingle one before I came to the *Cohoes Fall*. We obſerved a few in the woods to-day. The Ants were the ſame with our common red ones *(Formica rufa Linn.)* The Ant-hills conſiſt chiefly of the ſlate-like mouldered ſtone which abounds here, there being nothing elſe for them.

CHESTNUT-TREES grew ſcattered in the woods. We were told, that Mulberry-trees *(Morus rubra Linn.)* likewiſe grow wild here, but rather ſcarce; and this is the moſt northerly place where they grow in *America*; at leaſt, they have not been obſerved further to the north. We met with wild parſneps every day; but commonly in ſuch places where the land was or had been cultivated. Hemp grows

ſpontane-

ſpontaneouſly, and in great abundance, near old plantations.

THE woods abound with *Woodlice*, which were extremely troubleſome to us.

THE *Thuya occidentalis Linn.* appeared along the ſhores of the river. I had not ſeen it there before.

THE trees which grow along the ſhores, and on the adjacent hills, within our ſight to-day, are elms, birches, white firs, alders, dog-trees, lime-trees, red willows, and cheſtnut-trees. The *American* Elder, *(Sambucus Canadenſis Linn.)* and the wild vines, only appear in places where the ground has been ſomewhat cultivated, as if they were deſirous of being the companions of men. The lime-trees and white walnut-trees are the moſt numerous. The horn-beams, with inflated cones, *(Carpinus Oſtrya Linn.)* appeared now and then; but the water-beech and water-poplar never came within ſight any more.

WE frequently ſaw ground-ſquirrels and black ſquirrels in the woods.

AT a little diſtance from *Saratoga*, we met two *Indians* in their boats of bark, which could ſcarce contain more than one perſon.

NEAR *Saratoga* the river becomes ſhallow and

and rapid again. The ground is here turned into corn-fields and meadows, but on account of the war, it was not made use of.

SARATOGA has been a fort built of wood by the *English*, to stop the attacks of the *French Indians* upon the *English* inhabitants in these parts, and to serve as a rampart to *Albany*. It is situated on a hill, on the east-side of the river *Hudson*, and is built of thick posts driven in to the ground, close to each other, in the manner of palisades, forming a square, the length of whose sides was within the reach of a musket-shot. At each corner are the houses of the officers, and within the palisades are the barracks, all of timber. This fort has been kept in order and was garrisoned till the last war, when the *English* themselves in 1747 set fire to it, not being able to defend themselves in it against the attacks of the *French* and their *Indians*; for as soon as a party of them went out of the fort, some of these enemies lay concealed, and either took them all prisoners, or shot them.

I SHALL only mention one, out of many artful tricks which were played here, and which both the *English* and *French* who were present here at that time, told me repeatedly. A party of *French*, with their

Indians, concealed themſelves one night in a thicket near the fort. In the morning ſome of their *Indians*, as they had previouſly reſolved, went to have a nearer view of the fort. The *Engliſh* fired upon them, as ſoon as they ſaw them at a diſtance; the *Indians* pretended to be wounded, fell down, got up again, ran a little way, and dropped again. Above half the garriſon ruſhed out to take them priſoners; but as ſoon as they were come up with them, the *French* and the remaining *Indians* came out of the buſhes, betwixt the fortreſs and the *Engliſh*, ſurrounded them, and took them priſoners. Thoſe who remained in the fort had hardly time to ſhut the gates, nor could they fire upon the enemy, becauſe they equally expoſed their countrymen to danger, and they were vexed to ſee their enemies take and carry them off in their ſight and under their cannon. Such *French* artifices as theſe made the *Engliſh* weary of their ill-planned fort. We ſaw ſome of the paliſades ſtill in the ground. There was an iſland in the river, near *Saratoga*, much better ſituated for a fortification. The country is flat on both ſides of the river near *Saratoga*, and its ſoil good. The wood round about was generally cut down. The ſhores of the river are high, ſteep, and conſiſt of earth. We ſaw ſome hills

hills in the north, beyond the diſtant foreſts. The inhabitants are *Dutch*, and bear an inveterate hatred to all *Engliſhmen*.

We lay over night in a little hut of boards erected by the people who were come to live here.

June the 25th. Several ſaw-mills were built here before the war, which were very profitable to the inhabitants, on account of the abundance of wood which grows here.

The boards were eaſily brought to *Albany*, and from thence to *New York*, in rafts every ſpring with the high water; but all the mills were burnt at preſent.

This morning we proceeded up the river, but after we had advanced about an *Engliſh* mile, we fell in with a water-fall, which coſt us a deal of pains before we could get our canoe over it. The water was very deep juſt below the fall, owing to its hollowing the rock out by the fall. In every place where we met with rocks in the river, we found the water very deep, from two to four fathoms and upwards; becauſe by finding a reſiſtance it had worked a deeper channel into the ground. Above the fall, the river is very deep again, the water ſlides along ſilently, and increaſes ſuddenly near the ſhores. On both ſides till you come to Fort *Nicholſon*, the ſhore is covered with tall

trees. After rowing ſeveral miles, we paſſed another water-fall, which is longer and more dangerous than the preceding one.

GIANTS-POTS *, which I have deſcribed in the memoirs of the Royal *Swediſh* Academy of Sciences, are abundant near the fall of the rock which extends acroſs the river. The rock was almoſt dry at preſent, the river containing very little water at this ſeaſon of the year. Some of the giants-pots were round, but in general they were oblong. At the bottom of moſt of them lay either ſtones or grit, in abundance. Some were fifteen inches in diameter, but ſome were leſs. Their depth was likewiſe different, and ſome that I obſerved were above two foot deep. It is plain that they owed their origin to the whirling of the water round a pebble, which by that means was put in motion, together with the ſand.

WE intended to have gone quite up to Fort *Nicholſon* in the canoe, which would have been a great convenience to us; but we found it impoſſible to get over the upper fall, the canoe being heavy, and ſcarce any water in the river, except in one place where it flowed over the rock, and where it was impoſſible to get up, on account of the ſteep-

* This is the literal meaning of the *Swediſh* word *jætte grytor*. See the memoirs of the *Swed.* Acad. of Sciences for the year 1743, p. 122. and Kalm's vol. 1. p. 121.

ſteepneſs, and the violence of the fall. We were accordingly obliged to leave our canoe here, and to carry our baggage through unfrequented woods to Fort *Anne*, on the river *Woodcreek*, which is a ſpace from forty-three to fifty *Engliſh* miles, during which we were quite ſpent, through the exceſs of heat. Sometimes we had no other way of croſſing deep rivers, than by cutting down tall trees, which ſtood on their banks, and throwing them acroſs the water. All the land we paſſed over this afternoon was almoſt level, without hills and ſtones, and entirely covered with a tall and thick foreſt, in which we continually met with trees which were fallen down, becauſe no one made the leaſt uſe of the woods. We paſſed the next night in the midſt of the foreſt, plagued with muſkitoes, gnats, and wood-lice, and in fear of all kinds of ſnakes.

June the 26th. EARLY this morning we continued our journey through the wood, along the river *Hudſon*. There was an old path leading to Fort *Nicholſon*, but it was ſo overgrown with graſs, that we diſcovered it with great difficulty. In ſome places we found plenty of *raſpberries*, ſome of which were already ripe.

FORT *Nicholſon* is the place on the eaſtern ſhore of the river *Hudſon*, where a

wooden fortification formerly ſtood. We arrived here ſome time before noon, and reſted a while. Colonel *Lydius* reſided here till the beginning of the laſt war, chiefly with a view of carrying on a greater trade with the *French Indians*; but during the war, they burnt his houſe, and took his ſon priſoner. The fort was ſituated on a plain, but at preſent the place is all overgrown with a thicket. It was built in the year 1709, during the war which Queen *Anne* carried on againſt the *French*, and it was named after the brave *Engliſh* general *Nicholſon*. It was not ſo much a fort, as a magazine to Fort *Anne*. In the year 1711, when the *Engliſh* naval attempt upon *Canada* miſcarried, the *Engliſh* themſelves ſet fire to this place. The ſoil hereabouts ſeems to be pretty fertile. The river *Hudſon* paſſed cloſe by here.

Some time in the afternoon, we continued our journey. We had hitherto followed the eaſtern ſhore of the river *Hudſon*, and gone almoſt due North; but now we left it, and went E. N. E. or N. E. acroſs the woods, in order to come to the upper end of the river *Woodcreek*, which flows to Fort St. *Frederic*, where we might go in a boat from the former place. The ground we paſſed over this af-

afternoon was generally flat, and ſomewhat low. Now and then we met with rivulets, which were generally dried up during this ſeaſon. Sometimes we ſaw a little hill, but neither mountains nor ſtones, and the country was every where covered with tall and thick foreſts. The trees ſtood cloſe, and afforded a fine ſhade; but the pleaſure which we enjoyed from it was leſſened by the incredible quantity of gnats which fill the woods. We found ſeveral plants here, but they were far from each other, (as in our woods where the cattle have deſtroyed them,) though no cattle ever came here. The ground was every where thick covered with leaves of the laſt autumn. In ſome places we found the ground over-grown with great quantities of moſs. The ſoil was generally very good, conſiſting of a deep mould, in which the plants thrive very well. Therefore it ſeems that it would anſwer very well if it were cultivated: however, flowing waters were very ſcarce hereabouts; and if the woods were cleared, how great would be the effects of the parching heat of the ſun, which might then act with its full force!

We lodged this night near a brook, in order to be ſufficiently ſupplied with water,

which was not every where at hand during this ſeaſon. The muſkitoes, punchins or gnats, and the woodlice, were very troubleſome. Our fear of ſnakes, and of the *Indians*, rendered this night's reſt very precarious and unſecure.

PUNCHINS, as the *Dutch* call them, are the little gnats *(Culex pulicaris Linn.)* which abound here. They are very minute, and their wings grey, with black ſpots. They are ten times worſe than the larger ones, *(Culex pipiens Linn.)* or muſkitoes; for their ſize renders them next to imperceptible; they are every where careleſs of their lives, ſuck their fill of blood, and cauſe a burning pain.

WE heard ſeveral great trees fall of themſelves in the night, though it was ſo calm, that not a leaf ſtirred. They made a dreadful cracking.

June the 27th. WE continued our journey in the morning. We found the country like that which we paſſed over yeſterday, except meeting with a few hills. Early this morning we plainly heard a fall in the river *Hudſon*.

IN every part of the foreſt we found trees thrown down either by ſtorms, or age; but none were cut down, there being no inhabitants; and though the wood is very

very fine, yet nobody makes uſe of it. We found it very difficult to get over ſuch trees, becauſe they had ſtopped up almoſt all the paſſages, and cloſe to them was the chief reſidence of rattle-ſnakes, during the intenſeneſs of the heat.

About two o'clock this afternoon we arrived at Fort *Anne*. It lies upon the river *Woodcreek*, which is here at its origin no bigger than a little brook. We ſtayed here all this day, and next, in order to make a new boat of bark, becauſe there was no poſſibility to go down the river to Fort St. *Frederic*, without it. We arrived in time, for one of our guides fell ill this morning, and could not have gone any further with his burthen. If he had been worſe, we ſhould have been obliged to ſtop on his account, which would have put us under great difficulties, as our proviſions would ſoon have been exhauſted, and from the deſart place where we were, we could not have arrived at any inhabited place in leſs than three or four days. Happily we reached the wiſh'd-for place, and the ſick man had time to reſt and recover.

About Fort *Anne* we found a number of mice, of the common kind. They were probably the offspring of thoſe which were brought to the fort in the ſoldier's proviſions,

ſions, at the time when it was kept in a ſtate of defence.

We met with ſome apple and plumb-trees, which were certainly planted when the fort was in a good condition.

June the 28th. The *American Elm, (Ulmus Americana Linn.)* grows in abundance, in the foreſts hereabouts. There are two kinds of it. One was called the *White Elm*, on account of the inſide of the tree being white. It was more plentiful than the other ſpecies, which was called the *Red Elm*, becauſe the colour of the wood was reddiſh. Of the bark of the former the boats made uſe of here are commonly made, it being tougher than the bark of any other tree. With the bark of hiccory, which is employed as baſt, they ſow the elm-bark together, and with the bark of the red elm they join the ends of the boat ſo cloſe as to keep the water out. They beat the bark between two ſtones; or for want of them, between two pieces of wood.

The making of the boat took up half yeſterday, and all this day. To make ſuch a boat, they pick out a thick tall elm, with a ſmooth bark, and with as few branches as poſſible. This tree is cut down, and great care is taken to prevent the bark from being hurt by falling againſt other trees, or

or againſt the ground. With this view ſome people do not fell the trees, but climb to the top of them, ſplit the bark, and ſtrip it off, which was the method our carpenter took. The bark is ſplit on one ſide, in a ſtrait line along the tree, as long as the boat is intended to be; at the ſame time, the bark is carefully cut from the ſtem a little way on both ſides of the ſlit, that it may more eaſily ſeparate; the bark is then peeled off very carefully, and particular care is taken not to make any holes into it; this is eaſy when the ſap is in the trees, and at other ſeaſons the tree is heated by the fire, for that purpoſe. The bark thus ſtript off is ſpread on the ground, in a ſmooth place, turning the inſide downwards, and the rough outſide upwards, and to ſtretch it better, ſome logs of wood or ſtones are carefully put on it, which preſs it down. Then the ſides of the bark are gently bent upwards, in order to form the ſides of the boat; ſome ſticks are then fixed into the ground, at the diſtance of three or four feet from each other, in the curve line, in which the ſides of the boat are intended to be, ſupporting the bark intended for the ſides; the ſides of the bark are then bent in the form which the boat is to have, and according to that the ſticks are either put nearer

or

or further off. The ribs of the boat are made of thick branches of hiccory, they being tough and pliable. They are cut into several flat pieces, about an inch thick, and bent into the form which the ribs require, according to their places in the broader or narrower part of the boat. Being thus bent, they are put across the boat, upon the back, or its bottom, pretty close, about a span, or ten inches from each other. The upper edge on each side of the boat is made of two thin poles, of the length of the boat, which are put close together, on the side of the boat, being flat, where they are to be joined. The edge of the bark is put between these two poles, and sewed up with threads of bast, of the mouse-wood, or other tough bark, or with roots. But before it is thus sewed up, the ends of the ribs are likewise put between the two poles on each side, taking care to keep them at some distance from each other. After that is done, the poles are sewed together, and being bent properly, both their ends join at each end of the boat, where they are tied together with ropes. To prevent the widening of the boat at the top, three or four transverse bands are put across it, from one edge to the other, at the distance of thirty or forty inches from each

each other. Theſe bands are commonly made of hiccory, on account of its toughneſs and flexibility, and have a good length. Their extremities are put through the bark on both ſides, juſt below the poles, which make the edges; they are bent up above thoſe poles, and twiſted round the middle part of the bands, where they are carefully tied by ropes. As the bark at the two ends of the boat cannot be put ſo cloſe together as to keep the water out, the crevices are ſtopped up with the cruſhed or pounded bark of the red elm, which in that ſtate looks like oakum. Some pieces of bark are put upon the ribs in the boat, without which the foot would eaſily pierce the thin and weak bark below, which forms the bottom of the boat, for the better ſecurity of which, ſome thin boards are commonly laid at the bottom, which may be trod upon with more ſafety. The ſide of the bark which has been upon the wood, thus becomes the outſide of the boat, becauſe it is ſmooth and ſlippy, and cuts the water with leſs difficulty than the other. The building of theſe boats is not always quick; for ſometimes it happens that after peeling the bark off an elm, and carefully examining it, it is found pierced with holes and ſplits, or it is too thin to

venture

venture one's life in. In such a case another elm must be looked out; and it sometimes happens that several elms must be stripped of their bark, before one is found fit for a boat. That which we made was big enough to bear four persons, with our baggage, which weighed somewhat more than a man.

All possible precautions must be taken in rowing on the rivers and lakes of these parts with a boat of bark. For as the rivers, and even the lakes, contain numbers of broken trees, which are commonly hidden under the water, the boat may easily run against a sharp branch, which would tear half the boat away, if one rowed on very fast, exposing the people in it to great danger, where the water is very deep, especially if such a branch held the boat.

To get into such a dangerous vessel, must be done with great care, and for the greater safety, without shoes. For with the shoes on, and still more with a sudden leap into the boat, the heels may easily pierce through the bottom of the boat, which might sometimes be attended with very disagreeable circumstances, especially when the boat is so near a rock, and close to that a sudden depth of water; and such places are common in the lakes and rivers here.

I never saw the muskitoes *(Culex pipiens)* more plentiful in any part of *America* than they are here. They were so eager for our blood, that we could not rest all the night, though we had surrounded ourselves with fire.

WOOD-LICE *(Acarus Americanus Linn.)* abound here, and are more plentiful than on any part of the journey. Scarcely any one of us sat down but a whole army of them crept upon his clothes. They caused us as much inconvenience as the gnats, during the last night, and the short time we stayed here. Their bite is very disagreeable, and they would prove very dangerous, if any one of them should creep into a man's ear, from whence it is difficult to extract them. There are examples of people whose ears were swelled to the size of the fist, on account of one of these insects creeping into them, and biting them. More is said about them in the description which I have given to the Royal *Swedish* Academy of Sciences *.

THE *Whipperiwill*, or *Whip-poor-Will* cried all night on every side. The *Fireflies* flew in numbers through the woods at night.

FORT

* See the Memoirs of the Royal Academy for the year 1754, page 19, &c.

FORT *Anne* derives its name from Queen *Anne*; for in her time it ſerved as a fortification againſt the *French*. It lies on the weſtern ſide of the river *Woodcreek*, which is here as inconſiderable as a brook, of a fathom's breadth, and may be waded through in any part, during this ſeaſon. The fort is built in the ſame manner as the forts *Saratoga* and *Nicholſon*, that is to ſay, of paliſades, within which the ſoldiers were quartered, and at the corners of which were the lodgings of the officers. The whole conſiſted of wood, becauſe it was erected only with a view to reſiſt irregular troops. It is built on a little riſing ground which runs obliquely to the river *Woodcreek*. The country round about it is partly flat, partly hilly, and partly marſhy, but it conſiſts merely of earth, and no ſtones are to be met with, though ever ſo carefully ſought for. General *Nicholſon* built this fort in the year 1709; but at the concluſion of the war, then carrying on againſt the *French*, it ſhared the ſame fate with *Saratoga* and Fort *Nicholſon*, being burnt by the *Engliſh* in 1711. This happened with the following circumſtance: In 1711 the *Engliſh* reſolved to attack *Canada*, by land and by ſea, at the ſame time. A powerful *Engliſh* fleet ſailed up the river

St.

St. Lawrence to beſiege *Quebec*, and General *Nicholſon*, who was the greateſt promoter of this expedition, headed a numerous army to this place by land, to attack *Montreal*, at the ſame time from hence; but a great part of the *Engliſh* fleet was ſhipwrecked in the river St. *Lawrence*, and obliged to return to *New England*. The news of this misfortune was immediately communicated to General *Nicholſon*, who was adviſed to retreat. Captain *Butler* who commanded Fort *Mohawk*, during my ſtay in *America*, told me that he had been at Fort *Anne* in 1711, and that General *Nicholſon* was about to leave it, and go down the river *Wood-creek*, in boats ready for that purpoſe, when he received the accounts of the diſaſter which befel the fleet. He was ſo enraged, that he endeavoured to tear his wig, but it being too ſtrong for him, he flung it to the ground, and trampled on it, crying out *Roguery*, *treachery*. He then ſet fire to the fort, and returned. We ſaw the remains of the burnt paliſades in the ground; and I aſked my guides, Why the *Engliſh* had been at ſo great an expence in erecting the fort, and why they afterwards burnt it without any previous conſideration? They replied, that it was done to get money from the government once

more, for the rebuilding of the fort, which money coming into ſome people's hands, they would appropriate a great part of it to themſelves, and erect again a wretched, inconſiderable fort. They further told me, that ſome of the richeſt people in *Albany* had promoted their poor relations to the places for ſupplying the army with bread, &c. with a view to patch up their broken fortunes; and that they had acquired ſuch fortunes as rendered them equal to the richeſt inhabitants of *Albany*.

THE heat was exceſſive to-day, eſpecially in the afternoon, when it was quite calm. We were on the very ſpot where Fort *Anne* formerly ſtood; it was a little place free from trees, but ſurrounded with them on every ſide, where the ſun had full liberty to heat the air. After noon it grew as warm as in a hot bath *, and I never felt a greater

* In *Sweden* and in *Ruſſia* it is uſual for people of all ranks to bathe every week at leaſt one time; this is done in a ſtove heated by an oven, to a ſurpriſing degree, and which is enough to ſtifle people who are not uſed to it: for commonly the heat is encreaſed by the hot ſteam, cauſed by throwing red hot ſtones into water. In theſe baths, in *Ruſſia*, the lower ſort of people, men and women, bathe promiſcuouſly, as the *Romans* did, and from whom, as *Plutarch* obſerves, in his Life of *Cato*, the *Greeks* adopted this indelicate and indecent cuſtom, and which ſpread ſo much, that the Emperor *Adrian*, and *Marcus*

greater heat. I found a difficulty of breathing, and it ſeemed to me as if my lungs could not draw in a ſufficient quantity of air. I was more eaſed when I went down into the vallies, and eſpecially along the *Wood-creek*. I tried to fan the air to me with my hat, but it only encreaſed the difficulty of breathing, and I received the greateſt relief when I went to the water, and in a ſhady place frequently ſprinkled ſome water in the air. My companions were all very much weakened, but they did not find ſuch difficulty in breathing, as I had done; however towards evening the air became ſomewhat cooler.

June the 29th. HAVING compleated our boat, after a great deal of trouble, we continued our journey this morning. Our proviſions, which were much diminiſhed, obliged us to make great haſte; for by

Marcus Antoninus were obliged to make laws againſt it, but neither were they long obſerved, for we find ſoon the *Council of Laodicea* obliged to preſcribe a canon againſt this brutal cuſtom, and notwithſtanding this we find ſoon after that not only perſons of all ranks, but even clergymen and monks bathed promiſcuouſly with women, in the ſame baths; and from thence, it is probable, this cuſtom paſſed among the *Ruſſians*, when chriſtianity took place among them. Near the bath, in *Ruſſia*, is commonly a pond, where the people plunge in, when quite hot, and in winter they welter in the ſnow; and *Saturdays* it is common to ſee before the bath naked men and women, each having a bundle of rods in their hand, with which they gently beat one another, when in the bath. F.

being obliged to carry every thing on our backs, through the woods to Fort *Anne*, we could not take a great quantity of provisions with us, having several other very necessary things with us; and we did always eat very heartily. As there was very little water in the river, and several trees were fallen across it, which frequently stopped the boat, I left the men in the boat, and went along the shore with *Yungstroem*. The ground on both sides of the river was so low, that it must be under water in spring and autumn. The shores were covered with several sorts of trees, which stood at moderate distances from each other, and a great deal of grass grew between them. The trees afforded a fine shade, very necessary and agreeable in this hot season; but the pleasure it gave was considerably lessened by the numbers of gnats which we met with. The soil was extremely rich.

As we came lower down the river, the dykes, which the beavers had made in it, produced new difficulties. These laborious animals had carried together all sorts of boughs and branches, and placed them across the river, putting mud and clay in betwixt them, to stop the water. They had bit off the ends of the branches as neatly

neatly as if they had been chopped off with a hatchet. The grafs about thefe places was trod down by them, and in the neighbourhood of the dykes we fometimes met with paths in the grafs, where the beavers probably carried trees along. We found a row of dykes before us, which ftopped us a confiderable while, as we could not get forwards with the boat, till we had cut through them.

As foon as the river was more open, we got into the boat again, and continued our journey in it. The breadth of the river, however, did not exceed eight or nine yards, and frequently it was not above three or four yards broad, and generally fo fhallow, that our boat got on with difficulty. Sometimes it acquired fuch a fudden depth, that we could not reach the ground with fticks of feven feet length. The ftream was very rapid in fome places, and very flow in others. The fhores were low at firft, but afterwards remarkably high and fteep, and now and then a rock projected into the water, which always caufed a great depth in fuch places. The rocks confifted here of a grey quartz, mixed with a grey limeftone, lying in ftrata. The water in the river was very clear and tranfparent, and we faw feveral little

paths leading to it from the woods, ſaid to be made by beavers, and other animals, which reſorted here to drink. After going a little more than three *Engliſh* miles, we came to a place, where a fire was yet burning, and then we little thought that we had narrowly eſcaped death laſt night, as we heard this evening. Now and then we met with ſeveral trees lying acroſs the river, and ſome dykes of beavers, which were troubleſome to us.

TOWARDS night we met with a *French* ſerjeant, and ſix *French* ſoldiers, who were ſent by the commander of Fort *St. Frederic*, to accompany three *Engliſhmen* to *Saratoga*, and to defend them in caſe of neceſſity, againſt ſix *French Indians*, who were gone to be revenged on the *Engliſh*, for killing the brother of one of them in the laſt war. The peace was already concluded at that time, but as it had not yet been proclaimed in *Canada*, the *Indians* thought they could take this ſtep; therefore they ſilently got away, contrary to the order of the Governor of *Montreal*, and went towards the *Engliſh* plantations. We here had occaſion to admire the care of Providence for us, in eſcaping theſe barbarians. We found the graſs trod down all the day along, but had no thoughts of danger,

ger, as we believed that every thing was quiet and peaceable. We were afterwards informed, that theſe *Indians* had trod the graſs down, and paſſed the laſt night in the place where we found the burning brands in the morning. The uſual road which they were to take, was by Fort *Anne*, but to ſhorten their journey they had gone an unfrequented road. If they had gone on towards Fort *Anne*, they would have met us without doubt, and looking upon us all as *Engliſhmen*, for whoſe blood they were gone out, they could eaſily have ſurpriſed and ſhot us all, and by that means have been rid of the trouble of going any further to ſatisfy their cruelty. We were greatly ſtruck when the *Frenchmen* told us how near death we had been to-day. We paſſed the night here, and though the *French* repeatedly adviſed and deſired me not to venture any further with my company, but to follow them to the firſt *Engliſh* ſettlement, and then back to Fort *St. Frederic*, yet I reſolved, with the protection of the Almighty, to continue my journey the next day.

We ſaw immenſe numbers of thoſe wild pigeons flying in the woods, which ſometimes come in incredible flocks to the ſouthern *Engliſh* colonies, moſt of the in-

bitants not knowing where they come from. They have their nests in the trees here; and almost all the night make a great noise and cooing in the trees, where they roost. The *Frenchmen* shot a great number of them, and gave us some, in which we found a great quantity of the seeds of the elm, which evidently demonstrated the care of Providence in supplying them with food; for in *May* the seeds of the red maple, which abounds here, are ripe, and drop from the trees, and are eaten by the pigeons during that time: afterwards, the seeds of the elm ripen, which then become their food, till other seeds ripen for them. Their flesh is the most palatable of any bird's flesh I ever tasted.

Almost every night, we heard some trees crack and fall, whilst we lay here in the wood, though the air was so calm that not a leaf stirred. The reason of this breaking I am totally unacquainted with. Perhaps the dew loosens the roots of trees at night; or, perhaps there are too many branches on one side of the tree. It may be, that the above-mentioned wild pigeons settle in such quantities on one tree as to weigh it down; or perhaps the tree begins to bend more and more to one side, from its center of gravity, making the weight always greater for

for the roots to ſupport, till it comes to the point, when it can no longer be kept upright, which may as well happen in the midſt of a calm night as at any other time. When the wind blows hard, it is reckoned very dangerous to ſleep or walk in the woods, on account of the many trees which fall in them; and even when it is very calm, there is ſome danger in paſſing under very great and old trees. I was told, in ſeveral parts of *America*, that the ſtorms or hurricanes ſometimes only paſs over a ſmall part of the woods, and tear down the trees in it; and I have had opportunities of confirming the truth of this obſervation, by finding places in the foreſts, where almoſt all the trees were thrown down, and lay all in one direction.

Tea is differently eſteemed by different people; and I think we would be as well, and our purſes much better, if we were both without tea and coffee. However, I muſt be impartial, and mention in praiſe of tea, that if it be uſeful, it muſt certainly be ſo in ſummer, on ſuch journeys as mine, through a deſart country, where one cannot carry wine or other liquors, and where the water is generally unfit for uſe, as being full of inſects. In ſuch caſes, it is very reliſhing when boiled, and tea is drunk with it;

and

and I cannot sufficiently describe the fine taste it has in such circumstances. It relieves a weary traveller more than can be imagined, as I have myself experienced, together with a great many others who have travelled through the desart forests of *America*; on such journeys, tea is found to be almost as necessary as victuals *.

June the 30th. This morning we left our boat to the *Frenchmen*, who made use of it to carry their provisions; for we could not make any further use of it, on account of the number of trees which the *French* had thrown across the river during the last war, to prevent the attacks of the *English* upon *Canada*. The *Frenchmen* gave us leave to make use of one of their boats, which they had left behind them, about six miles from the place where we passed the last night. Thus we continued our journey on foot, along the river; and found the country flat, with some little vales here and there. It was every where covered with tall trees, of the deciduous kind; among which the beech, the elm, the *American* lime-tree, and the sugar-maple, were the most

* On my travels through the desart plains, beyond the river *Volga*, I have had several opportunities of making the same observations on Tea; and every traveller, in the same circumstances, will readily allow them to be very just. F.

moſt numerous. The trees ſtand at ſome diſtance from each other; and the ſoil in which they grow is extremely rich.

AFTER we had walked about a *Swediſh* mile, or ſix *Engliſh* miles, we came to the place where the ſix *Frenchmen* had left their bark boats, of which we took one, and rowed down the river, which was now between nineteen and twenty yards broad. The ground on both ſides was very ſmooth, and not very high. Sometimes we found a hill conſiſting of grey quartz, mixed with ſmall fine grains of grey ſpar. We likewiſe obſerved black ſtripes in it; but they were ſmall, that I could not determine whether they were of glimmer, or of another kind of ſtone. The hills were frequently divided into ſtrata, lying one above another, of the thickneſs of five inches. The ſtrata went from north to ſouth; and were not quite horizontal, but dipping to the north. As we went further on, we ſaw high and ſteep hills on the river-ſide, partly covered with trees; but in other parts, the banks conſiſt of a ſwampy turf ground, which gave way when it was walked upon, and had ſome ſimilarity to the ſides of our marſhes, which my countrymen are now about to drain. In thoſe parts where the ground was low and flat, we did not ſee any ſtones

ſtones either on the ground, or on the ſofter ſhore; and both ſides of the river when they were not hilly, were covered with tall elms, *American* lime-trees, ſugar-maples, beeches, hiccory-trees, ſome water-beeches, and white walnut-trees.

On our left we ſaw an old fortification of ſtones laid above one another; but nobody could tell me whether the *Indians* or the *Europeans* had built it.

We had rowed very faſt all the afternoon, in order to get forward; and we thought that we were upon the true road, but found ourſelves greatly miſtaken: for towards night we obſerved, that the reeds in the river bent towards us, which was a mark that the river likewiſe flowed towards us; whereas, if we had been on the true river, it ſhould have gone with us. We likewiſe obſerved, from the trees which lay acroſs the river, that nobody had lately paſſed that way, though we ſhould have ſeen the ſteps of the *Frenchmen* in the graſs along the ſhore, when they brought their boat over theſe trees. At laſt, we plainly ſaw that the river flowed againſt us, by ſeveral pieces of wood which floated ſlowly towards us; and we were convinced, that we had gone twelve *Engliſh* miles, and upwards, upon a wrong river, which obliged us to return, and to row till very

very late at night. We ſometimes thought, through fear, that the *Indians*, who were gone to murder ſome *Engliſh*, would unavoidably meet with us. Though we rowed very faſt, yet we were not able to-day to get half-way back to the place where we firſt left the true river.

THE moſt odoriferous effluvia ſometimes came from the banks of the river, towards night, but we could not determine what flowers diffuſed them. However, we ſuppoſed they chiefly aroſe from the *Aſclepias Syriaca*, and the *Apocynum androſæmifolium*.

THE *Muſk-Rats* could likewiſe be ſmelled at night. They had many holes in the ſhores, even with the ſurface of the water.

WE paſſed the night in an iſland, where we could not ſleep on account of the gnats. We did not venture to make a fire, for fear the *Indians* ſhould find us out, and kill us. We heard ſeveral of their dogs barking in the woods, at a great diſtance from us, which added to our uneaſineſs.

METEORO-

METEOROLOGICAL OBSERVATIONS.

ADVERTISEMENT.

IN the first column of these tables, the Reader will find the days of the month; in the second, the time or hour of the day, when the observations were made; in the third, the rising and falling of the thermometer; in the fourth, the wind; and in the fifth, the weather in general, such as rainy, fair, cloudy, &c.

THE thermometer which I have made use of is that of Mr. *Celsius*, or the *Swedish* thermometer so called, as I have already pointed out in the preface. To distinguish the degrees above freezing-point from those below it, I have expressed the freezing-point itself by oo, and prefixed o to every

degree below it. The numbers therefore which have no o before them, ſignify the upper degrees. Some examples will make this ſtill more intelligible. On the 17th of *December* it is remarked, that the thermometer, at eight o'clock in the morning, was at 02.5. It was therefore at 2 degrees and $\frac{5}{10}$, or half a degree, below the freezing-point; but at two in the afternoon, it was at 00.0, or exactly upon the freezing-point. If it had been 00.3, it would have ſignified that the thermometer was fallen $\frac{3}{10}$ of a degree below the freezing-point; but 0.3 would ſignify, that it was riſen $\frac{3}{10}$ of a degree above the freezing-point. Thus likewiſe 03.0. is three degrees below the freezing-point; and 4.0. four degrees above it.

The numbers in the columns of the winds ſignify as follows: 0, is a calm; 1, a gentle breeze; 2, a freſh gale; 3, a ſtrong gale; and 4, a violent ſtorm or hurricane. When, in ſome of the laſt tables, the winds are only marked once a day, it ſignifies that they have not changed that day. Thus, on the 21ſt of *December*, ſtands N. 0 fair. This ſhews that the weathercocks have turned to the north all day; but that no wind has been felt, and the ſky has been clear all the day long.

Before

BEFORE I went to *Canada* in ſummer 1749, I deſired Mr. *John Bartram* to make ſome meteorological obſervations in *Penſylvania*, during my abſence, in order to aſcertain the ſummer-heat of that province. For that purpoſe, I left him a thermometer, and inſtructed him in the proper uſe of it; and he was ſo kind as to write down his obſervations at his farm, about four *Engliſh* miles to the ſouth of *Philadelphia*. He is very excuſable for not putting down the hour, the degree of wind, &c. for being employed in buſineſs of greater conſequence, that of cultivating his grounds, he could not allow much time for this. What he has done, is however ſufficient to give an idea of the *Penſylvanian* ſummer.

Auguſt

D.	H.	Ther	Wind.	The Weather in general.
1	5 m	20.0	E S E 2	Fair.
	2 a	24.5	E 2	
2	5 m	22.0	E 2	
	2 a	24.5	E 2	
3	5 m	22.0	E 1	
	2 a	25.5	S S W 1	Cloudy with ſome rain.
4	5 m	22.0	S 1	Alternately fair, cloudy and rainy all day.
	1 a	21.0	S 1	
5	5 m	17.0	S S W 1	Chiefly rainy.
6	7 m	17.0	S 2	Cloudy.
	2 a	19.0	S 2	Somewhat cloudy, but chiefly fair.
7	5 m	15.5	S S W 2	Alternately fair and cloudy.
8	5 m	18.0	S S W 0	Fair all day.
	3 a	19.0	S S W 0	
9	6 m	17.5	W N W 0	
	4 a	21.0	W N W 1	
10	6 m	18.5	E 1	Fair.
	3 a	20.5	E 1	
11	6 m	47.0	E N E 1	Somewhat cloudy.
	½ a	18.5	S W 1	Fair.
	4	22 0	S W 1	
	6	22.0	W 3	
12	6 m	16.0	N W 1	Cloudy with ſome drizzl. rain at ten.
	4 a	19.0	N W 1	Cloudy, fair, ſome drizzl. rain altern.
13	6 m	17.0	W N W 2	Cloudy with ſome rain; foggy, ſometimes fair.
	2 a	18.5	W N W 2	
14	5 m	18.0	W S W 0	Somewhat cloudy, fair from 11 m. to 3a.
	4 a	20.0	W S W 0	Cloudy.
15	5 m	18.0	W S W 0	Cloudy; ſometimes fair; at ten o'clock fell a thin fog.
	2 a	19.5	N E 2	
16	6 m	18.3	N N E 2	Somewhat cloudy; ſometime fair.
	2 a	18.5		Dark; rainy at night.
17	6 m	18.5	E N E 2	Dark, with ſome drizzling rain.
	2 a	19.5		Drizzling rain all the afternoon.
18	6 m	19.0	E 2	Drizzling rain all the day.
	2 a	20.5		
19	6 m	19.5		Cloudy.
	2 a	20.0		Scattered clouds.

D.	H.	Ther	Wind.	The Weather in general.
20	6 m	19.5		Fair.
	2 a	21.5		Scattered clouds : sometimes rain.
21	6 m	20.8	E 1	Somewhat cloudy, fair at nine
	2 a	21 3		Thin clouds.
22	5 m	21.0		Fair ; about twelve it became cloudy.
	1 a	23.5	E S E 1	Cloudy.
23	5 m	22.2		Scattered clouds.
	7		S E 2	
	2 a	24.2		Scattered clouds, dark towards eve.
24	5 m	23.5	W S W 2	Violent rain.
	6		W 2	
	7		W N W 1	About seven it cleared up.
	9		N W 1	
	2 a			Scattered clouds.
25	6 m	24.5	W 1	Scattered clouds.
	10		W N W 3	
	2 a	23.5		
26	6 m	24.0	W 2	Fair. At night a great halo appeared round the sun.
	2 a	24.5	S W 2	Dark. A strong redness at sun-setting.
			W S W 1	Cloudy. At ten it began to rain, and
27	6 m	24.5	S E 2	it rained all day.
	11		E 3	
	1 a		N E 4	Rain.
	4	21.5	N 1	Scattered clouds.
28	7 m	23.0		
	2 a	23.5	S W 1	[lightning.
29	6 m		S W 3	Towards evening drizzl. rain and
	2 a	25.5	N W 2	Scattered clouds ; air very cool.
30	6 m	23.5		
	2 a	21.5	S W 1	Fair : in the morning it began to grow
31	6 m	22.2		cloudy ; at night lightning, hard rain, and some thunder.

September

D.	H.	Ther	Wind.	The Weather in general.
1	7 m	20. 0	N W 2	Scattered clouds.
	2 a	21. 5		Clouds paſſing by. Rain and ſtrong winds all the afternoon.
2	6 m	19. 0	N W 1	Scattered clouds all day.
	2 a	20. 5	N W 0	At night a great halo round the moon.
3	6 m	21. 5	W S W 0	Scattered clouds.
	2 a	23. 0	S 1	It became more cloudy. In the evening appeared a great halo round the ſun.
4	6 m	23. 3	E 1	Scattered clouds.
	12 n	27. 5	E S E 1	
	2 a	24. 0		
5	6 m	24. 5	S E 3	Scattered clouds.
	12 n	26. 5		
6	6 m	27. 0	S E 2	Scattered clouds,
	1 a	28. 5		At night a great halo round the moon, and the ſky very red.
7	6 m	27. 5	E 3	Dark ſometimes. The ſun ſhone through the clouds.
8	12 n	28. 5	N E 2	Scattered clouds.
8	6 m	26. 0	N N E 2	Scattered clouds all day.
	1 a	26. 5		
9	6 m	24. 5	N 1	Scattered clouds all day.
	1 a	24. 5		
10	5 m	24. 0	N N W 1	Fair.
	1 a	24. 5		
11	6 m	23. 2	W N W 1	Fair.
	2 a	25. 0		At night a halo round the moon.
12	6 m	24. 0	A Calm.	Fair, and very hot.
	½ a	26. 0		
13	5 m	25. 5	S E 1	Fair.
	1 a	26. 5		
14	6 m	25. 5	S E 1	Fair; but a cool wind all the morning.
	1 a	26. 5		
15	5 m	23. 0	S E 1	Scattered clouds.
	1 a	27. 5		It grew more cloudy. In the evening and enſuing night, violent rain and winds.
16	5 m	21. 5	N N E 1	It rained hard all day.
	2 a	21. 5		

D.	H.		Ther	Wind.	The Weather in general.
17	5	m	25.5	N W 1	Cloudy.
	1	a	21.0		Scattered clouds.
18	6	m	13.0	Calm.	Fair.
19	1	a	24.5	N N E 1	Fair all day.
20	6	m	14.0	N E 1	Scattered clouds.
21	6	m	11.0	N E 0	Scattered clouds.
	1	a	23.0		
22	7	m	10.5	N E 1	Fair.
	1	a	25.0		
23	6	m	11.0	N N E 1	Fair.
	2	a	28.0		
24	6	m	14.0	N E 1	Fair.
	2	a	28.0		It grew dark. At night came rain, which continued late.
25	6	m	18.0	N W 1	Dark. At 8, ſcattered clouds.
	2	a	28.0	N E 1	Scattered clouds.
26	6	m	15.5	N N E 1	Fair.
	2	a	27.5		
27	6	m	17.0	N E 1	Cloudy. Fair at 8, and all the morning.
	2	a	27.0		Cloudy.
28	6	m	14.0	N E 1	Fair and cloudy alternately.
	2	a	2[illegible].0		
29	7	m	15.5	N E 1	Cloudy.
	2	a	20.5		Fine drizzling rain.
30	7	m	16.0	N E 0	Alternately fair and cloudy.

D.	H.	Ther	Wind.	The Weather in general.
1	6 m	19.0	S 1	Fair. Scattered clouds at 8.
	2 a	18.5		Scattered clouds. Dark towards night.
2	6 m	18.5	S W o	Cloudy.
3	6 m	15.0	N W 1	Cloudy.
	1 a	18.0		Scattered clouds. Late at night a great halo round the moon.
4	7 m	6.0	N W 1	Fair.
	1 a	16.0		
5	7 m	2.0	N 1	Fair.
6	7 m	2.0	N E 1	Fair.
	1 a	18.0		At night a great halo round the moon.
7	6 m	7.0	E N E 1	Cloudy. Fair at 9, and all day.
8	6 m	14.0	E N E 1	Cloudy. Scattered clouds at 8.
9	6 m	18.0	S S E 1	Rain all the morning.
	3 a	23.0		Cloudy.
10	6 m	20.0	S W o	Fog, and a drizzling rain.
	2 a	23.0		Fair.
11	7 m	20.0	S W 1	Fog, which fell down. Fair at 8.
	2 a	26.0		Fair.
12	6 m	8.0	W N W 1	Fair all day.
	8		W 1	
	2 a	20.0	W S W 1	
13	6 m	2.0	W N W 1	In the morning, hoary froſt on the plants.
	2 a	17.0	W S W o	Fair all day.
14	6 m	5.0	S S W o	Fair.
	2 a	21.0		
15	6 m	4.5	S S E o	Fair.
	2 a	24.0		
16	6 m	11.0	E N E o	Cloudy.
17	6 m	8.0	N E 1	Cloudy.
	2 a	18.0		Cloudy. Violent rain all night.
18	6 m	12.0	N W o	Cloudy.
	5 a	4.0	S W o	
19	6 m	00.0	W S W 1	Scattered clouds.
	2 a	9.0		
20	5 m	01.0	W N W 1	Fair.
	2 a	9.0		
21	7 m	00.0	W o	In the morning ice on ſtanding water, white hoary froſt on the ground; fair all day.
	1 a	15.0		

D.	H.		Ther	Wind.	The Weather in general.
22	6	m	00.0	W 0	Fair.
23	6	m	4.5	N N E 1	Fair.
	1	a	16.0		
24	6	m	4.5	N 0	Fair.
	2	a	18.0		
25	6	m	4.5	S W 1	Fair. Air very much condenſed in the afternoon.
26	6	m	4.0	S W 0	Fair.
	3	a	19.0		
27	6	m	1.0	S W 0	Fair.
	3	a	17.0		
28	6	m	9.0	E 2	Heavy rain all day.
29	6	m	14.0	W 1	Fair.
	1	a	20.0		At night I ſaw a meteor, commonly called the ſhooting of a ſtar, going far from N. W. to S. E.
30	6	m	3.0	N W 1	Fair.
31	7	m	4.0	W 1	Fair.
	1	a	18.0		

D.	H.	Ther	Wind.	The Weather in general.
1	7 m	3.0	S 1	Fair.
2	6 m	4.0	N 0	Fair.
	3 a	18.0		
3	7 m	7.0	N W 1	Fair.
	1 a	14.0	S E 0	
4	7 m	1.0	S W 0	In the morning the fields were covered with white froſt.
	12 n	19.0		A fair day.
5	7 m	4.0	S W 1	Fair.
	1 a	17.0		
6	7 m	4.5	N E 1	Fair.
	1 a	12.0		Towards evening ſomewhat cloudy.
7	7 m	7.0	E N E 1	Cloudy.
	4 a	11.5		
8	7 m	11.5	E N E 2	Drizzling rain.
	½ a	18.0	E S E 3	Heavy rain.
9	7 m	17.0	S E 1	Drizzling rain.
	9 m	15.0	S S W 1	At eight it cleared up.
	1 a	17.0		Scattered clouds.
10	7 m	6.0	S S W 2	Fair.
	½ a	13.0	W N W 2	
11	7 m	4.0	W S W 1	Cloudy.
	½ a	12.0		Scattered clouds.
12	6 m	03.0	S W 1	Fair.
	2 a	11.5	N W 2	Cloudy.
	4	5.0		
13	7 m	00.0	N N E 1	This morning ice on the water.
	2 a	5.5		Fair.
14	7 m	0.5	N 3	Fair.
	1 a	8.0	N 2	
15	7 m	3.0	S 2	A ſtrong red aurora.
	1 a	8.0		Cloudy, and continual drizzling rain.
16	7 m	4.5	W 1	Fair.
17	7 m	01.0	W 1	Fair and cloudy alternately.
	1 a	8.0		Sometimes drizzling rain.
18	7 m	4.0	S 1	Fair.
	3 a	6.5	N W 2	
19	7 m	03.0	W 0	Fair.
	2 a	11.5		

D.	H.	Ther	Wind.	The Weather in general.
20	7 m	01.0	N N E 1	Fair.
	2 a		S 1	
21	7 m	15.0	S W 2	Fair.
	1 a	19.0		
22	7 m	20 0	E 1	Rain all day.
	2 a	10.0		
23	8 m	16.0	S 1	Cloudy, foggy, and rain now and
	8 a		S W 4	then.
24	7 m	00.0	W N W 3	Fair. [to-day.
25	7 m		N W 0	It was very cold laſt night, and fair
26			N W 0	Alternately fair and ſomewhat cloudy, and always pretty cold.
27				Fair; ſcattered clouds: pretty warm in the air.
28				Cloudy, foggy, and quite calm.
29				Somewhat cloudy.
30			N 1	Fair, and a little cold.

D.	H.	Ther	Wind.	The Weather in general.
1			N 1	Fair.
2			W S W 1	Fair, and cold; a great halo round the moon at night.
3			W S W 1	A pretty red aurora, however a fair day.
4	7 m	6.0	S S W 0	Fair.
	3 a	18.0		
5	7 m	5.5	N N E 1	
	4 a	9.5		
6	7 m	6.5	S S W 1	Cloudy.
	3 a	14.0		Somewhat fairer: hard rain in the next night.
7	7 m	13.5	S W 1	Cloudy.
	2 a	19.0		Fair.
8	7 m	5.0	S 1	Cloudy.
	2 a	13.5		Rain and wind next night; thick, but ſcattered clouds.
9	7 m	12.0	S W 2	
	2 a	10.0	W N W 2	
10			W N W 2	Scattered clouds.
11	7 m	2.0	S S W 1	Fair.
	2 a	12.5		
12	7 m	0.5	N E 1	Cloudy, rain, and fog all day from nine o'clock.
	2 a	10.5		
13	8 m	7.5	S W 0	Foggy, and cloudy.
	2 a	10.0		Next night a ſtrong N. W. wind.
14	8 m	1.0	N W 2	Scattered clouds.
	2 a	2.0		
15	8 m	c7.0	W N W 1	Fair and cloudy alternately.
	2 a	o1.0		
16	8 m	o1.0	W 1	Fair.
	2 a	1.5		
17	8 m	o2.5	N W 1	Cloudy, ſome ſnow, the firſt this winter.
	2 a	oo.o		
18	8 m	o3.0	W 1	Fair.
	2 a	4.0		
19	8 m	1.0	W 1	Cloudy.
	2 a	8.0		Fair.
20	8 m	o1.5	W S W 2	Scattered clouds: about ſix at night
	2 a	7.5	W S W 1	were quite red ſtripes on the ſky, to the North.

D.	H.	Ther	Wind.	The Weather in general.
21	8 m	07.0	N 0	Fair.
	2 a	2.0		
22	8 m	04.5	S E 0	Fair.
	2 a	13.0		It grew cloudy in the afternoon.
23	8 m	13.0	S S W 0	Heavy rain.
	2 a	18.0		Foggy and cloudy.
24	8 m	13.0	W S W 0	Thick fog.
	2 a	17.0	S W 1	Fair; but late in the evening a hard shower of rain.
25	8 m	18.0	S 3	Laſt night was a ſtorm, rain, thunder, and lightning.
	2 a	18.5	S S E 2	Heavy rain all day.
26	8 m	3.0	W 3	Laſt night a violent ſtorm from W. and S. and heavy rain. The morning was cloudy, and ſome ſnow fell.
	2 a	3.5	W N W 3	Clears up.
27	8 m	c4.0	W N W 3	Fair.
28	8 m	07.0	W 0	Fair.
	2 a	8.0		
29	8 m	3.0	N N E 1	Somewhat cloudy, and intermittent ſhowers.
	2 a	13.0	— 0	
30	8 m	8.0	N N E 1	Cloudy and foggy all day.
	2 a	10.0	— 0	
31	8 m	6.0	W 3	Fair.
	2 a	4.0	N W 1	At night a halo round the moon.

D.	H.	Ther	Wind.	The Weather in general.
1	7½ m	07.0	N W 0	Fair.
	2 a	4.0	— 0	
2	7½ m	04.5	W N W 1	Alternately fair and cloudy.
	2 a	5.5	— 1	
3	7½ m	2.0	N W 1	Cloudy.
	2 a	2.0	— 1	
4	7½ m	02.0	W 1	Fair.
	2 a	11.0	— 1	
5	7½ m	03.0	W 0	Fair.
6	7½ m	03.0	W 0	Fair, but darkened towards night,
	2 a	14.5	— 0	with ſome ſnow.
	5 a	14.5	N W 3	
7	7½ m	01.0	W N W 1	Somewhat cloudy.
	2 a	3.0	— 1	
8	7½ m	04.0	W N W 1	Fair.
	2 a	8.0	— 1	
9	7½ m	03.0	W N W 1	Aurora, cloudy, heavy rains at
	2 a	8.0	— 1	night.
10	7½ m	15.0	S 2	Cloudy, and ſhowers, ſome ſnow at
	2 a	2.0	W 4	night; at 9 morn. W. S. W. 3; at
	4 a			11. m. S. W. 4; at 2 aft. W. 4.
11	7½ m	03.0	W N W 3	Cloudy.
	2 a	04.0	— 3	
12	7¼ m	04.0	W N W 3	Fair.
	2 a	01.5	N N W 2	
13	7¼ m	07.5	W N W 2	Fair.
	1 a	03.0	— 2	Cloudy.
14	7¼ m	05.5	W N W 1	Cloudy, and ſnows all day; it lay
	1 a	02,0	— 1	above two inches thick.
15	7 m	07.0	W N W 0	Fair.
	2 a	3.0	— 0	
16	7 m	08.9	N W 3	All the laſt night W N W 4.
	8 m	09.0		Fair all day.
	2 a	08.0	— 1	
17	7 m	011.0	N N E 0	Cloudy; ſnows all day, and the en-
	7 a	09.0	— 0	ſuing night.
18	7 m	012.0	N W 1	Cloudy, and ſnows in the morning,
	10 m	011.0	— 1	fair all the afternoon, and the ther.
				at 011.0: ſnow lay five inches deep.

D.	H.	Ther.	Wind.	The Weather in general.
19	7 m	015.5	W 1	Fair.
	1 a	010.5	— 1	
20	7 m	012.5	W 1	Fair.
	2 a	07.0		
21	7 m	022.0	W N W 0	Fair.
	2 a	03.0	W 1	
22	7 m	05.0	W 1	Fair.
	2 a	01.0	W 1	Cloudy.
23	7 m	010.0	W N W 1	Fair; a great halo round the moon at
	7 a	3.0	— 1	night.
24	7 m	01.0	N N E 0	Cloudy, ſnows all day.
	2 a	4.0	N E 0	
25	7 m	00.0	W N W 0	Fair.
	2 a	4.0	W 0	
26	7 m	013.0	W N W 1	Fair.
	2 a	1.0	— 1	Cloudy; at three in the afternoon it began to ſnow.
27	7 m	07.0	W 1	Fair; halo round the moon at night.
	2 a	00.0	— 1	
28	7 m	01.0	W N W 1	Cloudy; ſnows almoſt all day.
	3 a	4.0	— 1	
29	7 m	05.0	N N E 1	Fair.
	3 a	03.0	— 1	
30	7 m	013.0	W N W 1	Fair; halo round the moon at night.
	3 a	4.0	— 1	
31	7 m	04.0	W N W 1	Fair; halo round the moon at night.
	3 a	8.0	— 1	

D.	H.		Ther	Wind.	The Weather in general.
1	7	m	03.0	W N W 1	Fair; a halo round the moon at night.
	1	a	11.0	W 1	
2	7	m	5.0	W N W 0	Fair.
	2	a	6.0	W 0	
3	7	m	00.0	W 0	Fair.
	2	a	19.5	— 0	
4	7	m	5.5	W 0	Cloudy; at ten at night wind N N E 3. ſnow.
	2	a	11.0	4 a. NNE 2	
5	7	m	06.0	N N W 2	Fair.
	1	a	03 0	N W 2	
6	7	m	010.5	N W 0	A cracking noiſe was heard in all houſes the night before. Aurora.—Fair all day,—at 7 in the morn. N W 0—at 9, W N W 1—at 11, W 1—at 2 in the afternoon, W SW 1.
	2	a	3.0	W S W 1	
7	7	m	01.0	N N E 1	Cloudy—fair—at 7 in the morn. N N E 1—at 9, N 1—at 10, W N W 1—at 12, N W 1.
	2	a	1.0	N W 1	
8	7	m	09.0	N W 0	Fair.
	2	a	7.0	W 1	
9	7	m	03.0	W 1	Fair.
	3	a	16.0	— 1	
10	7	m	7.0	W 1	Pretty clear; a violent ſtorm with rain all the enſuing night.
	1	a	11.0	S S W 4	
11	7	m	9.0	S S W 2	Fair; rain towards night; at night a light ſimilar to an *Aurora Borealis* in S. W.
	1	a	11.0		
12	7	m	4.0	S S W 3	Fair; about nine at night a faint *Aurora Borealis* in S W.
	1	a	10.0		
13	7	m	2.0	W N W 2	Cloudy.
	3	a	5.0	N W 2	Fair.
14	7	m	06.0	N W 1	Fair.
	3	a	02.5	W N W 2	Flying clouds.
15	6¾	m	010.5	N W 1	Fair; at eight in the evening an *Aurora Borealis*.
	2	a	03.0	W N W 0	
16	6¼	m	013.0	W N W 0	Fair.
	2	a	00.0	N W 1	
17	6¼	m	02.0	W N W 1	Cloudy and ſnow; wind all the afternoon long.
	2	a	00.0	W 1	

D.	H.	Ther	Wind.	The Weather in general.
18	6½ m	2.0	W N W 1	Cloudy.
	2 a	00.0		
19	6½ m	03.0	N N E 2	Cloudy; rain all day, mixed with snow and hail.
	2 a	01.0		
20	6½ m	1.5	N W 1	Cloudy.
	2 a	4.5		
21	6½ m	00.8	N W 0	Cloudy; at 5 in the morn. we heard
	4 a	4.0	N N E 1	a waterfall near a mill, about a mile S S of us making a stronger noise than common, tho' the air was very calm—at 10 began a rain which continued the whole day.
22	6½ m	3 0	W N W 2	Fair.
	2 a	3.5		
23	6½ m	06.0	W 2	Fair.
	4 a	4.0		Some clouds gathered round the sun.
24	6½ m	4 0	S S W 1	Cloudy.
	3 a	10.0	W 1	
25	6 m	3.0	W N W 0	Alternately fair and cloudy.
	2 a	1		
26	6 m	012.0	N N W 1	Fair; cloudy at night; at eight in the
	3 a	02.0		evening was a halo round the moon, and the clouds in S. quite red.
27	6 m	04.0	N 2	Cloudy, and snow in the morning;
	3 a	01.0		but fair at 4 in the afternoon.
28	6 m	04.5	N W 4	Flying clouds.
	3 a	03.5	W N W 4	

D.	H.	Ther	Wind.	The Weather in general.
1	6 m	09.0	W N W 2	Fair. A great halo round the moon at night.
	3 a	01.5		
2	6 m	06.0	N W 2	Fair. A faint halo round the moon at night.
	4 a	2 5		
3	6 m	04.0	N W 1	Fair. Cloudy afternoon. About 8 at night the clouds in S. W. were quite red. At 9 it began to snow.
	2 a	6.5	S 1	
4	6 m	0.5	E S E 1	Cloudy. Heavy rain at night.
	2 a	7.0	S 1	
5	6 m	4.0	W 1	Alternately fair and cloudy. The next night calm.
	2 a	11.0	W 3	
6	6 m	4.0	W 2	Fair.
7	6 m	00.0	W S W 1	Alternately fair and cloudy in the morning. In the afternoon cloudy, with intermittent rain and thunder.
	2 a	8.0		
8	6 m	2.0	W N W 0	Fair. About 8 at night we saw what is called a snowfire to the S.W.—See Vol. II. p. 81.
	3 a	20.0	W S W 2	
9	6 m	5.0	N 1	Fair.
	3 a	13.5		Cloudy. Snowfire in S. W. about 8 at night.
10	6½ m	5.0	S S E 1	Cloudy. Snow and rain all day, and next night.
	2 a	6.5	S E 1	
11	6 m	9.0	S S E 1	Cloudy and heavy rain in the morning. Clears up in the afternoon.
	3 a	14.0	W 1	
12	6 m	9.0	N N W 0	Cloudy in the morning. Clears up at 10. Towards night cloudy, with rain.
	3 a	15.0	E N E 0	
13	6 m	9.5	N N E 2	Cloudy, with heavy rain. Fair at 4 in the afternoon.
	2 a	8.0	10m. N 3	
14	6 m	4.0	W N W 2	Fair.
	2 a	10.0		
15	3 m	00.0	W S W 0	Fair. Cloudy towards night.
	3 a	13.0	W 2	
16	6 m	2.5	N N E 3	Snow violently blown about all day.
	3 a	01.0		
17	6 m	01.0	N W 2	Cloudy. Clears up at 8 in the morning.
	3 a	5.0		
18	6 m	02.0	W S W 0	Fair. The fields were now covered with snow.
	3 a	4.0	W 2	

D.	H.	Ther	Wind.	The Weather in general.
19	6 m	02.0	W N W 1	Fair.
	3 a	6.0	N W 2	
20	6 m	05.5	W 0	Fair. Cloudy towards night.
	3 a	11.5	S W 1	Cloudy.
21	6½ m	2.0	S S E 0	Cloudy. Intermittent ſhowers.
	3 a	14.5		
22	6 m	10.0	S S E 0	Cloudy.
	3 a	19.5		
23	6 m	15.0	S S E 1	Heavy rain.
	3 a	19.0		
24	6 m	8.0	S W 1	Fair.
	3 a	15.0		
25	6¼ m	6.5	W N W 3	Fair.
	3 a	11.0		Flying clouds.
26	6 m	00.0	W N W 2	Fair.
	5 a	11.0	S W 2	Flying clouds. About 8 at night a ſnowfire on the horizon in S. W.
27	6 m	3.0	W N W 1	Fair.
	3 a	9 0		
28	6½ m	3.0	S 1	Rain all the day, and the next night.
	3 a	12.0	11 a. NNW 3	
29	6 m	1 0	N N W 2	Fair.
	2 a	6.0		
30	6 m	03.0	E 1	Fair. Cloudy at noon: begins to ſnow, which continues till night, when it turned into rain.
	2 4	4.0	S E 1	
31	6¼ m	5.0	N 1	Cloudy.
	3 a	14.0		

D.	H.	Ther	Wind.	The Weather in general.
1	6 m	5.5	N N E 1	Rain in the morning,—afternoon,—and in the night.
	3 a	3.5	E 1	Snow, with much thunder and lightning.
2	6 m	0.5	N N E 1	Snow almoſt the whole day.
	3 a	0.5		
3	6 m	02.0	N W 1	Fair.
	3 a	9.0		
4	6 m	02.0	W 1	Fair.
	3 a	16.0		
5	6 m	00.5	N 1	Fair.
	3 a	19.0	S W 1	Sun very red at ſetting.
6	6 m	4.0	S W 1	Fair.
	3 a	23.0		
7	6 m	13.0	S 2	Fair. Cloudy afternoon.
	3 a	24.0		About 7 in the evening it began to rain, and continued till late at night.
8	7 m	9.0	N W 3	Flying clouds.
	3 a	13.0		
9	6 m	1.0	N 1	Alternately fair and cloudy. Snows in the evening, and at night.
	3 a	7.0		
10	7 m	2.5	N E 1	Cloudy. Began to rain at ten, and continued all day till night.
	3 a	6.5		
11	6 m	5.0	N E 1	Rain almoſt the whole day.
	3 a	9.0		
12	6 m	2.0	W N W 2	Fair. Afternoon cloudy, with hail and rain.
	2 a	13.0		
13	6 m		N W 2	Fair.
	2 a		S W 1	Cloudy.
14	6 m		E 1	Cloudy; fair at eight. Cloudy towards night.
	2 a			
15	6 m		E 1	Almoſt quite fair.
	2 a			
16	6 m	6.5	W N W 2	Fair.
	2 a	13.5	— 1	
17	6 m	7.0	S 1	Alternately fair and cloudy.
	3 a	16.0	S W 1	Rain.
18	7 m	6.0	N 0	Fair.
	3 a	18.0	N W 3	

D.	H.	Ther	Wind.	The Weather in general.
19	5½ m	2.0	N N W o	Fair.
	3 a	20.0	W 2	
20	6 m	2.0	S W o	A hoar froſt this morning. Fair and very hot all day.
	3 a			
21			S W 1	Fair; with hot vapours raiſed by the ſun.
22	5 m	13.0	S o	Almoſt fair.
	3 a	23.0		
23	5½ m	11.0	W 1	Fair.
	3 a	25.5		
24	6 m	12.0	S 1	Cloudy, intermittent drizzl. ſhowers.
	3 a	22.0		
25	6 m	18.0	S o	Rain the preceding night, and now and then this day. At night thunder and lightning.
	3 a	24.0		
26	6 m	28.0	W 1	Fair.
	3 a	30.0		
27	6 m	17.0	W 2	Fair.
	3 a	25.0		
28	6 m	7.0	W o	Fair.
	3 a	24.0		
29	6 m	7.0	N 2	Fair.
	3 a	17.0	E 2	
30	5 m	3.0	E 1	Flying clouds.
	3 a	15.5	S 1	

D.	H.	Ther	Wind.	The Weather in general.
1	4 m	01.5	S o	Hoar froſt this morning,—fair.
	3 a	18.5	S W 1	
2	5 m	1.0	W 1	Fair.
	3 a	23.0		
3	5½ m	4 o	W 1	Fair.
	3 a	27.5		
4	5 m	16.0	W 1	Fair.
5	5 m	13.0	S 3	Flying clouds.
	3 a	27.0		
6	5 m	14.5	N o	Fair.
7	5 m	13.0	N o	Somewhat cloudy.
8	5 m	4.0	N o	Fair.
9	6 m	14.0	S 1	Rain almoſt the whole day.
	3 a	14.0		
10	6 m	13.0	S S W o	Intermittent ſhowers.
	3 a	16.0		
11	6 m	12.0	W S W o	Fair.
	3 a	28.0		
12	6 m	13.0	W N W 2	Fair.
	3 a	20.0		
13	5 m	9 o	N W 1	Fair.
	3 a	18.5		
14	5 m	00.5	N W o	Fair.
15	5 m	9.0	S S W 2	Cloudy.
	3 a	20.0		Rain.
16	5 m	17.0		Cloudy.
	4 a	23.0		
17	5 m	20.0	S 1	Rains intermittently all day; and lightens very much at night.
	3 a	24.0		
18	5 m	13.0		Fair.
19	5 m	17.0	W 2	Fair.
20	5 m	19.0	W 1	Fair.
	3 m	24.0		
21	6 m	20.0		Fair.
22			S W 1	Fair. Very hot.
23	5 m	17.0	S W 1	Fair.
	3 a	33.5		
24	12 m	32 o	S W 1	Fair.

D	H.		Ther	Wind.	The Weather in general.
25	8	m	23.0	S W 1	Fair, and very warm.
	2	a	28.0		
26	8	m	21.0	W N W 2	Flying clouds; at night thick clouds, with ſtorm and rain.
	3	a	25.0		
27	7	m	17.0	W 2	Thick, ſcattered clouds.
	2	a	25.0		Pretty cool.
28	7	m	15.0	W 1	Flying clouds.
	2	a	25.0		
29	7	m	16.0	W 2	Flying clouds.
	2	a	25.0		
30	5	m	13.0	W N W 1	Fair.
	—	a	25.0	W 1	Cloudy.
31	5	m	13 0	S W 1	Somewhat cloudy.
	1	a	27.0		Fair.

D.	H.	Ther	Wind.	The Weather in general.
1	5 m	23.0	S W 1	Rain the preceding night.
2			S E 1	Morning cloudy,—clears up at ten,—flying clouds.
3	7 m	24.0	S W 1	Flying clouds; afternoon, thunder-clouds, with rain from the N W.
4	3 a	26.0	N W 1	Flying clouds.
5	5½ m	15.5	S 1	Fair.
	3 a	22.0		
6	5 m	18.5	S W 1	Alternately fair and cloudy.
	3 a	23.0		
7	All d	20.0		Cloudy and rainy.
8	6 m	15.5	N W o	Cloudy.
	3 a	23.0	— 1	Flying clouds.
9	5 m	13.0		Fair.
10	5 m	11.0	S W 1	Fair.
	3 a	22.5		
11	7 m	20.0	N 1	Flying clouds.
	2 a	33.0	S W 1	Thunder-ſtorm, with rain.
12	6 m	23.0	N o	Fair.
	3 a	32.0	S 2	Somewhat cloudy.
13	5 m	19.0	S E 2	Almoſt fair.
	3 a	27.0		
14	6 m	26.0	S 1	Fair.
	3 a	25.0		Thunder-clouds, with rain.
15	6 m	18.0	N o	Fair.
	3 a	26.5		
16	6 m	20.0	N N E 1	Fair.
	2 a	28.0		
17	5½ m	18.0	N o	Fair.
	3 a	27.5		
18	5 m	21.0	E S E 1	Fair.
	3 a	32.0	N E 1	Thunder, with heavy ſhowers.
19	6 m	20.0	N N W 1	Fair.
	3 a	27.0		
20	5 m	18.0	S 1	Fair.
	3 a	26.0		Cloudy.
21	5 m	23.0	S W o	Cloudy, with ſome ſhowers.
22	5 m	9.0	W 1	Fair.
23	6 m	17.0	S 1	Fair.
	— a		N W 1	Cloudy.

D.	H.	Ther	Wind.	The Weather in general.
24	6 m	20.5	S 1	Cloudy, afterwards fair.
	— a		S W 1	Thunder and rain.
25	5 m	23.0	S 1	Fair.
	2 a	32.0		
26	5 m	14.0	N 1	Fair.
27	6 m	1[illegible].0		Fair.
28	6 m	18.0	S 1	Fair.
	1 a	35.0		
29	7 m	[illegible]6.0		Fair.
30	5 m	11.0	S 1	Fair.
	3 a	31.0	W 1	

D.	H.	Ther	Wind.	The Weather in general.
1			N 3	Flying clouds.
2	5 m	7.5	N 2	Fair.
3	8 m	26.0	N 1	Fair.
	2 a	28.0	— 1	Thunder-ſtorm, and rain at night.
4	6 m	20.0	S 1	Cloudy; intermittent ſhowers in the
	— a		N 2	afternoon.
			W 1	Fair.
5				
	4 a	26.0	— 1	Cloudy; rain at night.
6	5½ m	18.0	S W 1	Rain all the preceding night; fair in day-time.
7	4½ m	17.0	N W 0	Fair.
8	6 m	16.0	N 0	Alternately fair and cloudy. A halo round the ſun, in the forenoon.
9	7 m	21.0	S W 0	Rain the preceding night. In day-time, cloudy, with ſome ſhowers.
	3 a	22.0		
10	4¾ m	18.0	S W 0	Fair; ſometimes flying clouds and ſhowers.
	3 a	24.5	— 1	
11	5 m	17.0	S S E 1	Fair.
	2 a	26.0	— 1	
12	5 m	22.0	W 1	Fair.
13	6 m	20.0	S S W 1	Fair.
	3 a	33.0	— 1	
14	5 m	21.0	W S W 1	Fair.
	2 a	28.0	— 1	
15	5 m	26.0	N N E 1	Fair.
	3 a	28.0	— 1	
16	5 m	14.0	S 0	Fair; ſometimes cloudy.
	10 m		S S E 1	
17	5 m	19.0	S 1	Fair.
	3 a	24.0	— 1	Cloudy.
18	5 m	15.0	N N E 0	Fair.
	2 a	25.0	— 0	
19	5 m	19.0	S S W 1	Cloudy; rain.
	— a			Pretty fair.
20	5 m	19.0	S 1	Fair.
	3 a	24.0	— 1	Cloudy; ſome rain.
21			S 0	Fair.
	3 a	27.0	— 0	Flying clouds.
22	5 m	16.0	S W 2	Fair.
	3 a	27.0	S W 2	

D.	H.		Ther	Wind.	The Weather in general.
23	6	m	19.0	S S W 1	Alternately fair and cloudy.
	3	a	28.5	— 1	
24	5	m	20.0	S W 1	Fair.
	3	a	29.0	— 1	
25	5	m	20.0	W S W 0	Fair.
	3	a	29.5	— 0	
26	5	m	21.0	S 0	Fair.
	3	a	30.0	— 1	
27	5	m	22.0	W 1	Cloudy; intermittent ſhowers.
	3	a	21.5	— 1	
28	6	m	17.0	W 1	Fair.
	3	a	27.0	— 1	
29	6	m	16.0	N W ½	Fair; flying clouds at night, and ſhowers.
	2	a	24.0	— 1	
30	6	m	14.0	W N W 1	Fair.
	2	a	26.0	— 1	
31	6	m	16.0	E 1	Cloudy; rain almoſt all day.
	3	a	22.0	— 1	

Aug 4th

D.	H.	Ther	Wind.	The Weather in general.
1	6 m	22.0	N E 1	Cloudy. Some ſhowers.
	3 a	28.0	— 1	
2	4½ m	16.0	N E 1	Fair.
	a		S E 1	Cloudy. Fair towards night.
3	5 m	13.0	S W 2	Fair.
4	m		N E 2	Cloudy. Some ſhowers.
	2 a	21.0	— 2	
5	m		N E 1	Fair.
	a		S W 1	
6	5 m	16.0	N E 3	Heavy rain all day.
	3 a	16.0	— 3	Some thunder.
7	6 m	13.0	E S E 1	Cloudy. Frequent ſhowers.
	3 a	16.0	— 1	
8	6 m	16.0	S W 1	Cloudy. Some ſhowers.
	3 a	27.0	— 1	
9	6 m	14.0	S W 1	Flying clouds.
	1 a	20.0	— 1	Rain at night.
10	6 m	14.0	S W 1	Flying clouds.
	3 a	24.0	— 1	
11	6 m	15.5	W 1	Cloudy.
12	6 m	14.0	W 1	Flying clouds.
	2 a	25.0	— 1	
13	7 m	15.5	N W 1	Fair.
	2 a	30.0	— 1	
14	6 m	16.0	N E 2	Fair.
	2 a	26.0	— 2	
15	6 m	14.0	N E 1	Fair.
	2 a	28.0	— 1	
16	5 m	14.0	S E 1	Fair. At night thunder and rain.
	3 a	26.0	— 1	
17	5 m	14.5	S 0	Flying Clouds.
	3 a	27.0	— 0	
18	5 m	16.0	W 1	Thunder and rain in the morning. At
	3 a	29.0	— 1	ten in the morning flying clouds.
19	6 m	17.0	W 1	Fair.
	3 a	30.0	— 1	
20	5 m	16.5	S W 0	Fair.
	3 a	28.0	— 0	
21	5 m	17.0	S W 1	Fair.
	2 a	29.0	— 1	
	5 a	27.0	— 1	

D.	H.		Ther.	Wind.		The Weather in general.
22	5	m	19.0	N E	2	Rain all day.
	3	a	17.5			
23	5	m	16.5	S W	3	Rain early in the morning. At 10 m.
	2	a	22.5	—	3	flying clouds.
24	6	m	13.5	S W	2	Flying clouds.
	2	a	22.0	—	2	
25	5	m	7.0	S W	2	Fair.
	4	a	20.5	—	2	
26	5	m	13.0	N E	1	Alternately fair and cloudy.
	3	a	18.0	—	1	Much rain this afternoon.
27	5	m	10.5	S W	1	Flying clouds.
	2	a	23.0	—	1	
28	5	m	10.0	S W	1	Fair.
	2	a	20.0	—	1	
29	5	m	13.0	N E	2	Fair.
30	5½	m	11.0	N E	2	Fair.
31	6	m	13.6	S	1	Fair and cloudy alternately.
	3	a	18.5	—	1	Intermittent ſhowers.

September

D.	H.	Ther	Wind.	The Weather in general.
1	5½ m	14.5	N N W 1	Fair.
	3 a	30.0	— 1	
2	5½ m	9.0	N 1	Fair.
	2 a	18.0	S S W 1	
3	5½ m	7.5	S 1	Somewhat cloudy. Now and then fair.
	2 a	20.0	— 1	
4	6 m	14.0	S 1	Now and then a ſhower; and in the intervals fair.
	2 a	17.5	— 1	
5	6 m	14.0	N E 2	Fog. Rain all day. Now and then thund.
6	10½ m	15.0	N E 2	Fog, and drizzling rain all day.
	10¾ a	15.0	— 2	
7	7 m	17.0	S W 1	Fog and rain.
	3 a	22.0	— 1	Fair.
8	5½ m	15.0	S S W 1	Fair.
	4 a	28.0	— 1	
9	5 m	17.5	E N E 2	Fair.
	3 a	25.0	— 2	
10	5½ m	16.0	N E 2	Fair.
	3 a	26.0	— 2	
11	5½ m	15.0	E N E 0	Fair.
	3 a	25.0	— 0	
12	7 m	14.5	N N E 1	Fair.
	a		S W 1	
13	5¼ m	14.0	N E 1	Fair.
	1½ a	24.5	— 1	
14	5 m	15.0	N E 2	Fair.
	1 a	22.5	— 2	
15	5½ m	16.0	N N E 3	Fair. Forenoon, a halo round the ſun.
	2 a	19.0	— 3	
16	5¼ m	8.5	N N E 1	Fair.
	3 a	20.5	— 1	
17	5 m	12.0	S W 0	Fair.
18	6 m	17.0	S W 1	Fair.
	3 a	27.0	— 1	
19	6 m	14.0	S W 1	Fair.
	3 a	26.0	— 1	
20	6 m	19.0	S W 1	Fair.
	3 a	26.0	— 1	Cloudy. Rain towards night.
21	6 m	15.0		Fair.
	3 a	19.5		
22	6 m	13.0	E 0	Somewhat cloudy.
	3 a	22.0	— 0	

D.	H.	Ther	Wind.	The Weather in general.
23	6 m	14.0	S W 0	Fair.
24	6 m	18.0	S W 2	Fair. Rain at noon.
	2 a	26.0	— 2	Flying clouds in the afternoon.
25	7 m	16.0	W 1	Alternately clear and cloudy.
	2 a	17.0	— 1	
26	8 m	12.5	N E 1	Fair.
	3 a	11.5	— 1	Cloudy and rainy.
27	6 m	9.3	N 1	Rain all day.
	3 a	14.0	— 1	
28	6 m	8.0	S W 1	Heavy rain all day.
	3 a	14.0	— 1	
29	6 m	8.0	S 1	Fog.
	1 a	13.0	— 1	Flying clouds.
30	8 m	14.0	S W 2	Drizzling rain.
	2 a	18.0	— 2	Somewhat clear.

October 1749.

D.	H.	Ther	Wind.	The Weather in general.
1	7½ m	9.0	N W 1	Rain.
	n		— 1	Somewhat fairer.
2	7 m	2.0	W 1	Hoarfroſt this morning. Fair all day.
3	6 m	3.5	S W 1	Fair.
	1 a	12.0	— 1	
4	6 m	11.0	S 1	Rain.
5	6 m	10.5	N E 1	Cloudy.
	a	11.0	— 1	
6	6½ m	10.0	E N E 1	Rain all day.
	3 a	12.0	— 1	
7	6½ m	10.0	E N E 1	Flying clouds.
	2 a	14.0		
8	6½ m	7.0	S 1	Fair.
	3 a	18.0	S 1	

METEOROLOGICAL OBSERVATIONS,

Made by Mr. JOHN BARTRAM, near *Philadelphia*, During my Abſence, in the Summer of the Year 1749.

June 1749.

D.	Ther Morn	Ther Aft.	Wind.	The Weather in general.
1	22	25	W	Cloudy.
2	20	27	W	Cloudy.
3	23	28	W	Showers.
4	22	28	W	Fair.
5	18	25	W	Fair.
6	18	25	W	Cloudy.
7	22	22	N E	Cloudy.
8		21	N E	
9		21	N	
10	14	22	E	
11	22	23	E	
12	25	25	E	
13	23	25	E	
14	25	27	E 3	
15	24	28	E	Fair.
16	22	26	E	
17	23	27	E	
18	25	27	E	
19	23	24	N W	
20	17	26	W	
21	24	26	W	
22	18	27	W	
23	15	29	W	
24	22	30	W	
25	22	31	W	
26	23	30	N	
27	19	32	W	
28	24	36	W	
29	25	37	W	
30	25	36	N	

July

D.	Ther Morn	Ther Aft.	Wind.	The Weather in general.
1	21	30	W	
2	18	27	N W	
3	26	28	S W	Heavy ſhowers.
4	24	36	N W	
5	22	32	W	
6	22	34	N W	Rain.
7	20	35	W	Hard ſhowers.
8	20	35	N E	Rain.
9	20	29	N	Fair.
10	16	29	N	Fair.
11	17	33	N W	Fair.
12	20	35	W	Fair. Rain at night.
13	22	33	W	Fair.
14	26	30	W	Hard ſhowers.
15	20	29	N	Fair.
16	21	30	E	Rain.
17	29	29	N E	Cloudy.
18	18	19	N E	Rain.
19	18	33	W	Fair.
20	19	33	W	Fair.
21	22	31	W	Fair.
22	23	23	W	Heavy ſhowers.
23	23	25	W	Heavy ſhowers.
24	20	36	W	Fair.
25	27	36	W	
26	28	32	W	
27	24	30	W	Fair.
28	19	27	W	Fair.
29	23	30	W	Rain.
30	30	34		
31	21	34		

H.	Ther Morn	Ther Aft.	Wind.	The Weather in general.
1				
2	18	32		
3	17	30		
4	18	33		
5	22	39	W	
6	18	37	N 2	
7	17	27	W	
8	14	25	N W	
9	12	24	N W	
10	13	24	N W	
11	11	25	N W	
12	14½	30	N W	
13	18	31	N W	
14	18	30	W	
15	15	30	W	Rain.
16	23	33	N	
17	14	34	N W	
18	18	37	W	
19	18	25	S W	
20	20	26	N E	Rain.
21	20	25	N W	
22	23	34	N W	
23	17	34	W	
24	18	30	W	
25	20	32	NW by W	
26	10	24	N W	Fair.
27	12	20	N W	Fair.
28	13	23	N W	Fair.
29	22	24	W	Fair.
30	17	25	E	
31	20	29	E	

H.	Ther Morn	Ther Aft.	Wind.	The Weather in general.
1	19	30	E	Hard ſhowers.
2	18	20	E	Rain.
3	19	25	E	Rain.
4	22	25	E	Foggy.
5	23	21	N E	Cloudy.
6	23	37	N E	Cloudy.
7	24	34	N E	Cloudy.
8	24	32	N E	Cloudy.
9	23	33	N E	Rain.
10	23	32	W	Rain.
11	19	25	N E	
12	13	25	N E	
13	12	20	N E	
14	12	33	N E	
15	13	27	N E	
16	20	26	N E	
17	17	27	E	
18	16	34	S E	
19	12	30	S W	
20	17	26		
21	17	25	W	
22	15	30	E	
23	20	29	E	
24	21	29	W	
25	23	28	W 3	
26	20	15	E by N	Thunder-ſtorm.
27	15	19	N W	
28	10	20	N W	
29				
30	6	26	W	

October 1749.

D.	Ther. M.	Ther. Aft.	Wind.	D.	Ther. M.	Ther. Aft.	Wind.
1	13	25	W	5	17	30	E
2	14	29	N W	6	18	30	E
3	8	15	N	7	16	21	N W
4	13	29	W	8	11	22	N W

End of Vol. II.